

Fast Ethernet Switches

AT-8000 Series

AT-8016F/MT

AT-8016F/SC

AT-8024

AT-8024GB

AT-8024M

AT-8026FC



Installation Guide



Simply connecting the  world

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Electrical Safety and Emission Statement

Standards: This product meets the following standards.

U.S. Federal Communications Commission

RADIATED ENERGY

Note: This equipment has been tested and found to comply with the limits for a Class A digital device pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with this instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Note: Modifications or changes not expressly approved by the manufacturer or the FCC can void your right to operate this equipment.

Canadian Department of Communications

This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

RFI Emission

FCC Class A, EN55022 Class A, VCCI Class A, C-TICK, EN61000-3-2, EN61000-3-3 1



Warning: In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures. 2

Immunity

EN55024 3

Electrical Safety

UL 1950 (UL/cUL), EN60950 (TUV) 4



Laser

EN60825 5

Important: Appendix C contains translated safety statements for installing this equipment. When you see the 1, go to Appendix C for the translated safety statement in your language.

Wichtig: Anhang C enthält übersetzte Sicherheitshinweise für die Installation dieses Geräts. Wenn Sie 1 sehen, schlagen Sie in Anhang C den übersetzten Sicherheitshinweis in Ihrer Sprache nach.

Vigtigt: Tillæg C indeholder oversatte sikkerhedsadvarsler, der vedrører installation af dette udstyr. Når De ser symbolet 1, skal De slå op i tillæg C og finde de oversatte sikkerhedsadvarsler i Deres eget sprog.

Belangrijk: Appendix C bevat vertaalde veiligheidsopmerkingen voor het installeren van deze apparatuur. Wanneer u de 1 ziet, raadpleeg Appendix C voor vertaalde veiligheidsinstructies in uw taal.

Important : L'annexe C contient les instructions de sécurité relatives à l'installation de cet équipement. Lorsque vous voyez le symbole 1, reportez-vous à l'annexe C pour consulter la traduction de ces instructions dans votre langue.

Täärkeää: Liite C sisältää tämän laitteen asentamiseen liittyvät käännettyt turvaohjeet. Kun näet 1-symbolin, katso käännettyä turvaohjetta liitteestä C.

Importante: L'Appendice C contiene avvisi di sicurezza tradotti per l'installazione di questa apparecchiatura. Il simbolo 1, indica di consultare l'Appendice C per l'avviso di sicurezza nella propria lingua.

Viktig: Tillegg C inneholder oversatt sikkerhetsinformasjon for installering av dette utstyret. Når du ser 1, åpner du til Tillegg C for å finne den oversatte sikkerhetsinformasjonen på ønsket språk.

Importante: O Anexo C contém advertências de segurança traduzidas para instalar este equipamento. Quando vir o símbolo 1, leia a advertência de segurança traduzida no seu idioma no Anexo C.

Importante: El Apéndice C contiene mensajes de seguridad traducidos para la instalación de este equipo. Cuando vea el símbolo 1, vaya al Apéndice C para ver el mensaje de seguridad traducido a su idioma.

Obs! Bilaga C innehåller översatta säkerhetsmeddelanden avseende installationen av denna utrustning. När du ser 1, skall du gå till Bilaga C för att läsa det översatta säkerhetsmeddelandet på ditt språk.

Preface

This guide contains the hardware installation instructions for your new AT-8000 Series Fast Ethernet Switch.

How This Guide is Organized

This manual contains the following chapters and appendices:

Chapter 1, Product Description, describes the features and components of the switch.

Chapter 2, Installation, contains the installation instructions.

Chapter 3, Troubleshooting, provides information on how to resolve problems that might occur with the switch.

Appendix A, Technical Specifications, contains the switch's technical specifications.

Appendix B, Default Switch Settings, lists the factory default settings.

Appendix C, Translated Electrical Safety and Emission Information, contains translations of the warnings and cautions in the manual.

Document Conventions

This document uses the following conventions to highlight important information:

Note

Notes provide additional information.



Warning

Warnings inform you that performing or omitting a specific action may result in bodily injury.



Caution

Cautions inform you that performing or omitting a specific action may result in equipment damage or loss of data.

Where to Find Web-based Guides

The installation and user guides for all Allied Telesyn products are available in Portable Document Format (PDF) from the Allied Telesyn web site at www.alliedtelesyn.com. You can view the documents online or download them onto a local workstation or server.

Once you have installed your AT-8000 Series Switch, refer to following manuals for instructions on how to manage and configure the unit. The manuals are available from the Allied Telesyn web site:

- ❑ **AT-S39 Management Software User's Guide**
PN 613-50245-00
- ❑ **AT-S39 Command Line Interface User's Guide**
PN 613-50354-00

Contacting Allied Telesyn Technical Support

You can contact Allied Telesyn technical support online or by telephone.

Online Support You can request technical support online by accessing the Knowledge Base from our web site at <http://kb.alliedtelesyn.com>. You can use the Knowledge Base to submit questions to our technical support staff and review answers to previously asked questions.

Telephone Support For Technical Support by telephone, contact Allied Telesyn at one of the following locations:

- | | |
|---|---|
| Americas
United States, Canada, Mexico, Central America, South America
Tel: 1 (800) 428-4835 | Germany
Germany, Switzerland, Austria, Eastern Europe
Tel: (+49) 30-435-900-126 |
| Asia
Singapore, Taiwan, Thailand, Malaysia, Indonesia, Korea, Philippines, China, India, Hong Kong
Tel: (+65) 3815-612 | Italy
Italy, Spain, Portugal, Greece, Turkey, Israel
Tel: (+39) 02-41-30-41 |
| Australia
Australia, New Zealand
Tel: 1 (800) 000-880 | Japan
Tel: (+81) 3-3443-5640 |
| France
France, Belgium, Luxembourg, The Netherlands, Middle East, Africa
Tel: (+33) 1-60-92-15-25 | United Kingdom
United Kingdom, Denmark, Norway, Sweden, Finland, Iceland
Tel: (+44) 1-235-442560 |

Management Software Updates

Allied Telesyn periodically updates the management software programs for our managed products. You can obtain a new version of a management software program from our web site at www.alliedtelesyn.com or our FTP server at [ftp.alliedtelesyn.com](ftp://ftp.alliedtelesyn.com). To use the FTP server, enter 'anonymous' for the user name when you log in and your e-mail address for the password.

For Sales or Corporate Information

You can contact Allied Telesyn for sales or corporate information at the location listed below:

Allied Telesyn, Inc.

19800 North Creek Parkway, Suite 200

Bothell, WA 98011

Tel: 1 (425) 487-8880

Fax: 1 (425) 489-9191

Chapter 1

Product Description

The AT-8000 Series switches are managed, Layer 2 Fast Ethernet switches. They offer a wide range of features and capabilities, all designed to simplify the task of creating or expanding an Ethernet or Fast Ethernet network.

The basic configuration of each model is listed in Table 1.

Table 1 Basic System Configurations

Model	Configuration
AT-8016F/MT	16 fiber optic ports and two expansion module slots
AT-8016F/SC	16 fiber optic ports and two expansion module slots
AT-8024	24 twisted pair ports
AT-8024GB	24 twisted pair ports and two GBIC expansion slots
AT-8024M	24 twisted pair ports and two expansion module slots
AT-8026FC	24 twisted pair ports and two fiber optic ports

Common Features

Features common to the AT-8000 Series Switches include:

- ☐ 16 100Base-FX or 24 10Base-T/100Base-TX ports, depending on the model
- ☐ Enhanced stacking
- ☐ System and port LEDs
- ☐ RS-232 port for out-of-band management
- ☐ AT-S39 management software for local and remote management
- ☐ Port trunking
- ☐ Port mirroring
- ☐ Port security
- ☐ BOOTP and Dynamic Host Configuration Protocol (DHCP)
- ☐ Internet Group Management Protocol (IGMP) snooping
- ☐ Port-based and tagged VLANs (IEEE 802.1Q-compliant)
- ☐ Basic VLAN mode
- ☐ Auto-Negotiation (IEEE 802.3u-compliant)
- ☐ Spanning tree protocol (IEEE 802.1D-compliant)
- ☐ Quality of Service (IEEE 802.1p-compliant)
- ☐ Backpressure and flow control (IEEE 802.3x-compliant)
- ☐ Store and forward packet handling
- ☐ 4 kilobyte MAC address table with automatic aging

Front Panel Components

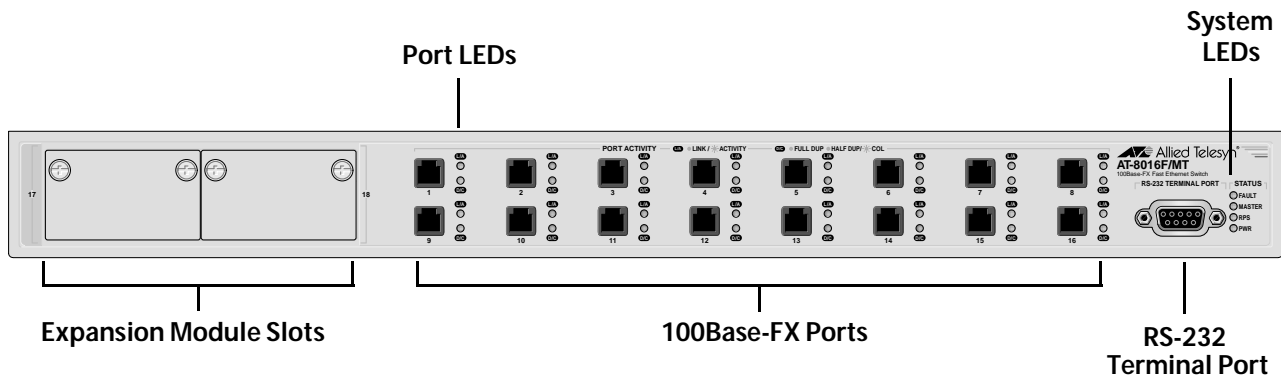


Figure 1 AT-8016F/MT Front Panel

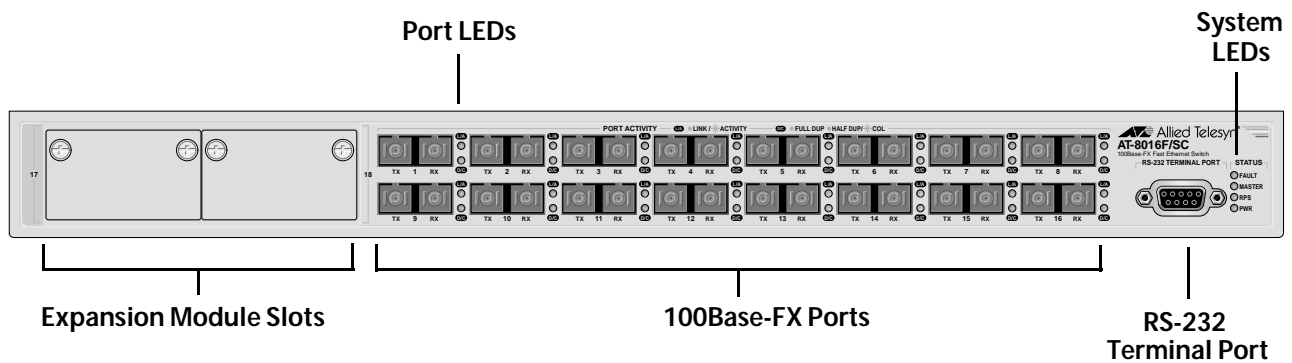


Figure 2 AT-8016F/SC Front Panel

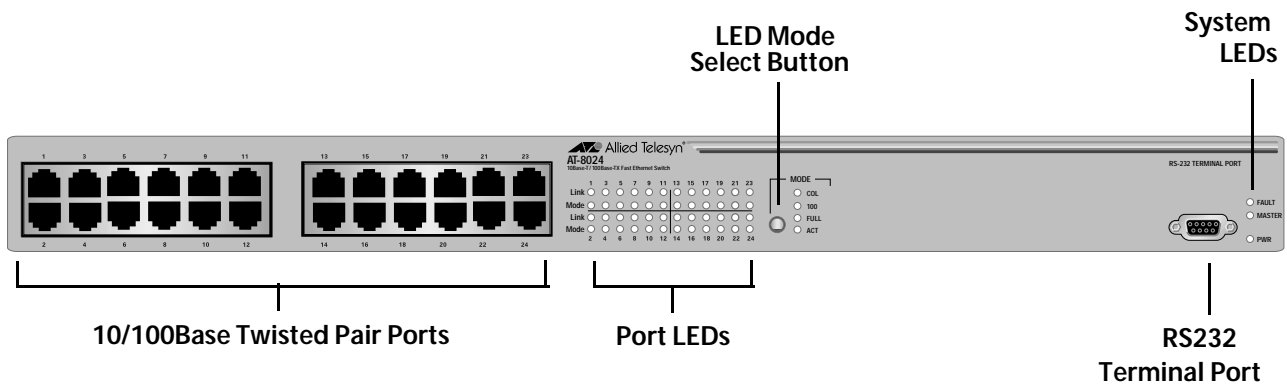


Figure 3 AT-8024 Front Panel

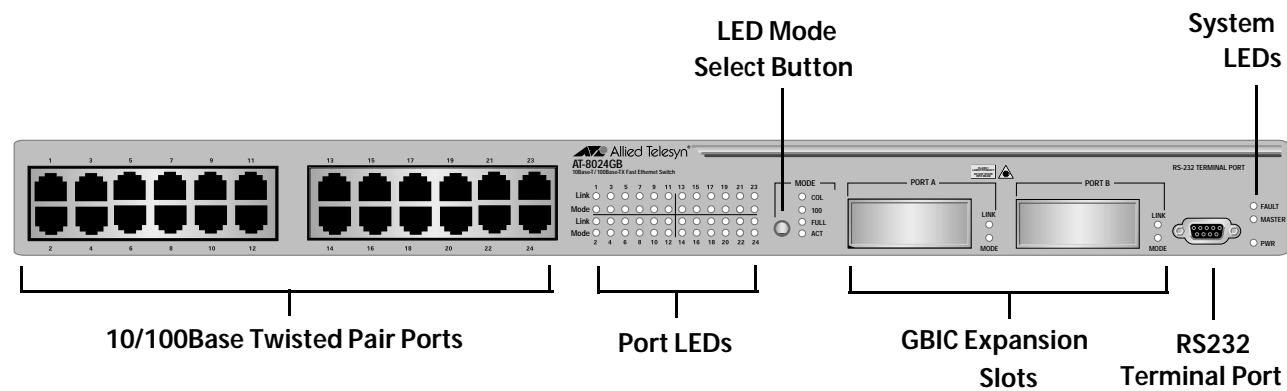


Figure 4 AT-8024GB Front Panel

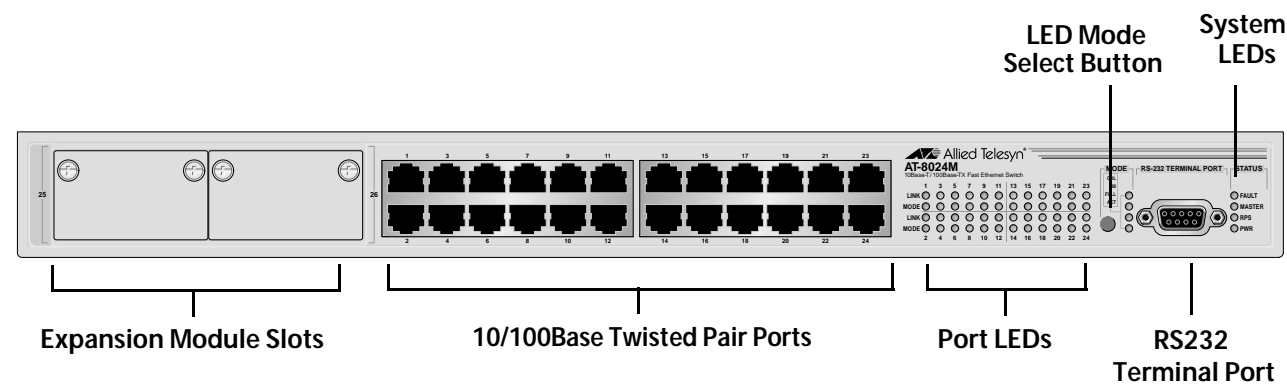


Figure 5 AT-8024M Front Panel

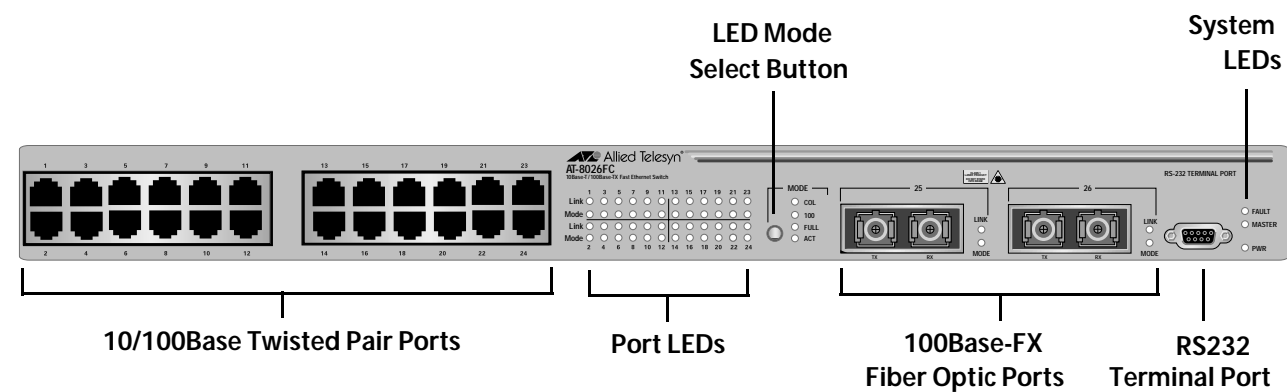


Figure 6 AT-8026FC Front Panel

Back Panels

Figure 8 illustrates the back panel of the AT-8016F/MT and AT-8024F/SC Switches.

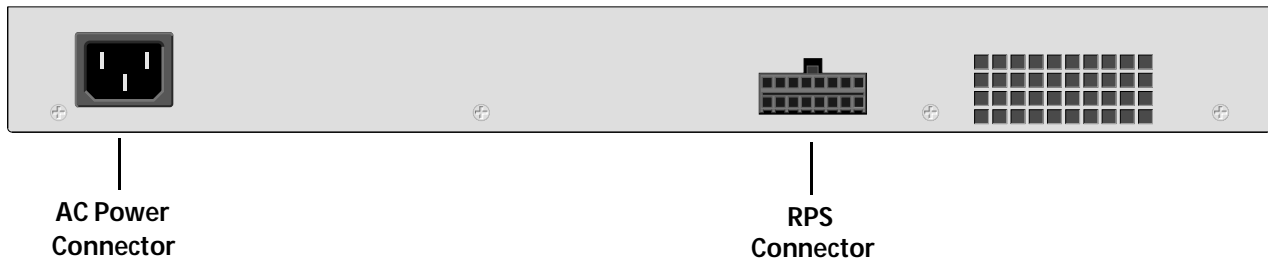


Figure 7 Back Panel of the AT-8016F/MT and AT-8016F/SC Switches

Figure 8 illustrates the back panel of the AT-8024, AT-8024GB, and AT-8026FC Switches.

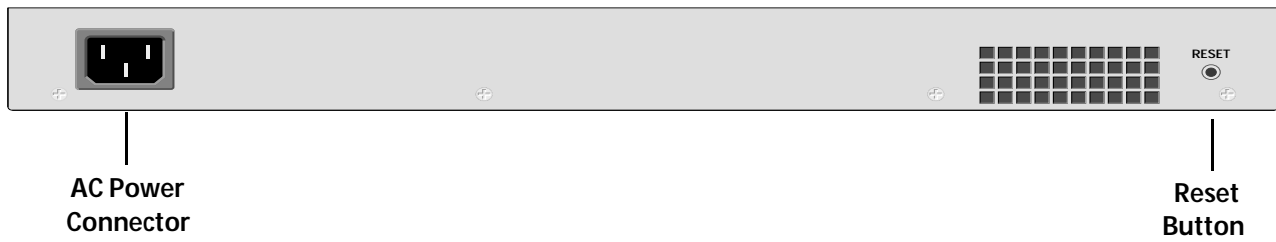


Figure 8 Back Panel of the AT-8024, AT-8024GB, and AT-8026FC Switches

Figure 9 illustrates the back panel of the AT-8024M Fast Ethernet Switch.

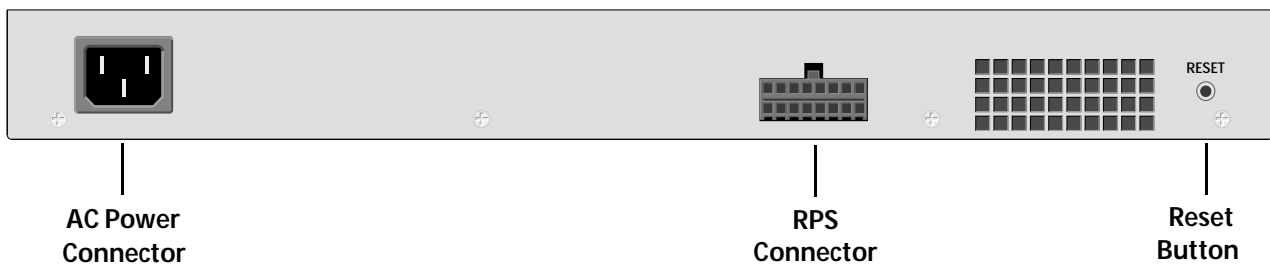


Figure 9 Back Panel AT-8024M Switch

Hardware Features

The following sections describe these hardware features of the AT-8000 Series Fast Ethernet Switches:

- ☐ Fiber Optic Ports
- ☐ Twisted Pair Ports
- ☐ Gigabit Interface Converter (GBIC) Expansion Slots
- ☐ Module Expansion Slots
- ☐ Twisted Pair Port LEDs and the LED Mode Select Button
- ☐ Fiber Optic Port LEDs
- ☐ System LEDs
- ☐ RS-232 Terminal Port
- ☐ Reset Button
- ☐ RPS Connector
- ☐ AC Power Connector

Fiber Optic Ports

Systems

- ☐ AT-8016F/SC
- ☐ AT-8016F/MT
- ☐ AT-8026FC

Description

The AT-8016F/SC and AT-8016F/MT Switches feature 16 fiber optic ports. The AT-8026FC Switch has two fiber optic ports in addition to its standard 24 twisted pair ports. The operating characteristics of the fiber optic ports on the three switches are the same.

Type of Connector - The sixteen fiber optic ports on the AT-8016F/SC switch and the two fiber optic ports on the AT-8026FC switch have dual SC connectors. The fiber optic ports on the AT-8016F/MT uses MT-RJ connectors.

Speed - The ports have a fixed operating speed of 100 megabits per second (Mbps). The speed cannot be changed.

Duplex Mode - The fiber optic ports can operate in either half- or full-duplex mode. You can set the duplex mode manually or allow the switch to set it automatically through Auto-Negotiation.

Maximum Distance - Each fiber optic port has a maximum operating distance of 2 kilometers (1.25 miles) when operating in full-duplex mode and 412 meters (1,360 feet) when operating in half-duplex mode.

Type of Cabling - The ports can use either 50/125 or 62.5/125 micron multimode fiber optic cable.

Note

Do not use single-mode fiber optic cable with these ports.

Twisted Pair Ports

Systems

- ☐ AT-8024
- ☐ AT-8024GB
- ☐ AT-8024M
- ☐ AT-8026FC

Description

The above Fast Ethernet switches feature 24 twisted pair ports.

Type of Connector - All twisted pair ports feature 8-pin RJ-45 connectors. (For the port pinouts, refer to **RJ-45 Twisted Pair Port Pinouts** on page 85 in **Appendix A, Technical Specifications**.)

Speed - The ports are 10Base-T and 100Base-TX compliant and are capable of both 10 megabits per second (Mbps) and 100 Mbps speeds. You can set the port speed manually or, since the ports are IEEE 802.3u Auto-Negotiation compliant, you can let the switch set each port's speed automatically. With Auto-Negotiation, the switch automatically matches the highest possible common speed between each switch port and each end node. For example, if an end node is capable of only 10 Mbps, the switch sets the port connected to the end node to 10 Mbps.

Note

Auto-Negotiation is activated as the default on all twisted pair ports on the switch. To deactivate Auto-Negotiation and set the speeds manually, refer to the **AT-S39 Management Software User's Guide**.

Duplex Mode - Each twisted pair port on the switch can operate in either half- or full-duplex mode. The twisted pair ports are IEEE 802.3u-compliant and will Auto-Negotiate the duplex mode setting. If the end node connected to a twisted pair port on the switch is capable of full-duplex operation, the switch sets the twisted pair port to full-duplex. If the end node is capable of only half-duplex, the port is set to half-duplex.

If desired, Auto-Negotiation on one or all of the switch ports can be disabled so that you can set the duplex mode manually through the switch's management software.

Maximum Distance - Each twisted pair port has a maximum operating distance of 100 m (328 ft.).

Type of Cabling - For 10 Mbps operation, Category 3 or better 100 ohm shielded or unshielded twisted pair cabling is required. For 100 Mbps operation, Category 5 or Enhanced Category 5 (5E) 100 ohm shielded or unshielded twisted pair cabling is required.

Auto-MDI - The ports are auto-MDI. They automatically configure themselves as either MDI or MDI-X. This feature allows you to use either straight-through or crossover twisted pair cables to connect devices to the ports.

Gigabit Interface Converter (GBIC) Expansion Slots

System

- ❑ AT-8024GB Switch

Description

The AT-8024GB Fast Ethernet Switch has two expansion slots on the front panel, labelled Port A and Port B, which correspond to Ports 25 and 26, respectfully. Each slot can accommodate one optional fiber optic Gigabit Interface Converter (GBIC) Ethernet module.

An GBIC module is a fast and easy way for you to add an 1000 Mbps fiber optic port to your Fast Ethernet switch. GBIC modules can be used to extend the distance of your network, build a high-speed backbone network between switches, or connect additional nodes to the network, such as high-speed servers.

Figure 10 shows an example of a fiber optic GBIC module.

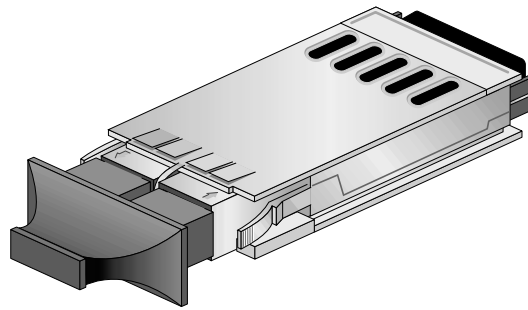


Figure 10 GBIC Module

Note

For a list of the Allied Telesyn GBIC modules supported by the AT-8024GB Fast Ethernet Switch, contact your Allied Telesyn sales representative.

Module Expansion Slots

Systems

- ☐ AT-8024M
- ☐ AT-8016F/SC
- ☐ AT-8016F/MT

Description

There are two expansion slots on the front panel of these switches. Each can accommodate an expansion module. You can use the slots to add 100Base and 1000Base fiber optic and twisted pair ports to the switch.

Note

For a list of the Allied Telesyn expansion modules supported by the switches, contact your Allied Telesyn sales representative.

Twisted Pair Port LEDs and the LED Mode Select Button

Systems

- ☐ AT-8024
- ☐ AT-8024GB
- ☐ AT-8024M
- ☐ AT-8026FC

Description

The port LEDs on the front panel display port status information. Each port has two LEDs. The Link LED indicates whether there is a valid link between a port and the end node connected to it.

Each port also has a Mode LED. This LED displays a variety of status information, including port speed and duplex mode. You use the Mode Select button on the front panel to toggle the Mode LEDs to display different status information. The LEDs next to the Mode Select button indicate the status being displayed by the port Mode LEDs. For example, if the Mode 100 LED is lit, then the port Mode LEDs are displaying port speed.

Note

Toggling the Mode Selection button does not affect the normal operations of the switch.

Table 2 describes the port LEDs.

Table 2 Twisted Pair Port LEDs

LED	State	Description
LINK	OFF	Indicates that there is no link between the port and the end node.
	Solid Green	Indicates a valid link has been established between the port and the end node.
Mode - COL	OFF	Indicates that no data collisions are occurring on the port.
	Flashing Green	Indicates that data collisions are occurring on the port.
Mode - 100	OFF	Indicates that the port is operating at 10 Mbps.
	Solid Green	Indicates that the port is operating at 100 Mbps
Mode - FULL	OFF	Indicates that the port is operating in half-duplex mode.
	Solid Green	Indicates that the port is operating in full-duplex mode.
Mode - ACT	OFF	Indicates that there is no activity on the port.
	Flashing Green	Indicates that the port is transmitting and/or receiving data packets.

Fiber Optic Port LEDs

Systems

- ☐ AT-8016F/MT
- ☐ AT-8016F/SC
- ☐ AT-8024GB (GBIC slots)
- ☐ AT-8026FC

Description

The fiber optic ports on the AT-8016F/MT and AT-8016F/SC Switches have two LEDs, labeled L/A and D/C. The LEDs are defined in Table 3.

Table 3 AT-8016F/MT and AT-8016F/SC Fiber Optic Port LEDs

LED	State	Description
L/A	OFF	Indicates that there is no link between the port and the end node.
	Solid Green	Indicates a valid link has been established between the port and the end node.
	Flashing Green	Indicates that the port is transmitting and/or receiving data packets.
D/C	Solid Green	Indicates that the port is operating in full-duplex mode.
	Solid Amber	Indicates that the port is operating in half-duplex mode.
	Flashing Amber	Indicates that data collisions are occurring on the port.

Note

The AT-8016F/MT and AT-8016F/SC Switches do not have a LED Mode Select Button.

Next to each GBIC slot on the AT-8024GB Switch and fiber optic port on the AT-8026FC Switch are two LEDs. The LEDs display the operating status of the fiber optic port. Use the Mode Select Button on the switch to toggle the status information displayed by the MODE LED. The LEDs are defined in Table 4.

Table 4 AT-8024GB and AT-8026FC Fiber Optic Port LEDs

LED	State	Description
LINK	OFF	Indicates that there is no link between the port and the end node.
	Solid Green	Indicates a valid link has been established between the port and the end node.
Mode - COL	OFF	Indicates that no data collisions are occurring on the port.
	Flashing Green	Indicates that data collisions are occurring on the port.
Mode - 100	Solid Green	Indicates that the port is operating at 1000 Mbps (AT-8024GB switch) or 100 Mbps (AT-8026FC switch).
Mode - FULL	OFF	Indicates that the port is operating in half-duplex mode.
	Solid Green	Indicates that the port is operating in full-duplex mode.
Mode - ACT	OFF	Indicates that there is no activity on the port.
	Flashing Green	Indicates that the port is transmitting and/or receiving data packets.

System LEDs Systems

☐ All models

Description

The system LEDs on the front panel display general status information about the entire switch and are defined in Table 5.

Table 5 System LEDs

LED	State	Description
Fault	OFF	Indicates normal operation.
	Solid Red	Indicates that the switch or management software has malfunctioned. (Refer to Chapter 3, Troubleshooting on page 75 for instructions on how to troubleshoot the problem.)
	Flashing Red	Indicates that the switch is loading its operating software, running diagnostic tests, writing messages to FLASH, or downloading files using XMODEM.
MASTER	Solid Amber	Indicates that the switch is functioning as the master switch of an enhanced stack.
	OFF	Indicates that the switch is not a master switch of an enhanced stack or is not a member of a stack.
RPS (AT-8016F Series and AT- 8024M Fast Ethernet Switches Only)	Solid Green	Indicates that an optional redundant power supply is connected to the switch.
	OFF	Indicates that there is no optional redundant power supply connected to the switch.
PWR	Solid Green	Indicates that the switch is receiving power.

RS-232 Terminal Port Systems

- ☐ All models

Description

The RS-232 Terminal Port is used to establish a local (out-of-band) management session with the switch and to configure the switch's operating parameters. To establish a local management session, you connect either a VT100 terminal or a personal computer with a terminal emulation program to the port.

Note

You are not required to manage the AT-8000 Series Fast Ethernet Switch. The default switch settings may be sufficient for your network, in which case you can use the unit as an unmanaged switch. For the switch's default settings, refer to **Appendix B, Default Switch Settings** on page 90.

The RS-232 Terminal Port has a DB-9 female connector and uses a straight-through RS-232 cable (not provided).

The default settings for the RS-232 Terminal Port are:

- ☐ Baud rate: Auto-detect (range 1200 to 115200 bps; default 9600 bps)
- ☐ Data bits: 8
- ☐ Parity: None
- ☐ Stop bits: 1
- ☐ Flow control: None

Note

These default settings are for a DEC VT100 or ANSI terminal, or an equivalent terminal emulation program.

Reset Button Systems

- ☐ AT-8024
- ☐ AT-8024GB
- ☐ AT-8024M
- ☐ AT-8026FC

Note

The AT-8016F/MT and AT-8016F/SC Switches do not have a Reset button. You can reset these systems through the AT-S39 management software or by power cycling the unit by disconnecting and reconnecting the power cord.

Description

The switches listed above have a Reset button on the back panel. You might need to reset the switch under the following conditions:

- ☐ To resolve a switch problem.
- ☐ To reset the switch statistics stored by the management software.

The button is recessed in the switch's chassis. You will need to use a pen or the end of a paper clip to press the button.

You can also reset the switch using the management interface, as explained in the **AT-S39 Management Software User's Guide**.

Note

Resetting the switch causes the device to momentarily stop forwarding data packets while it loads its operating software. This will interrupt normal network operations. The switch will resume forwarding packets once it has completed reloading its software, a task that requires only a few seconds to complete.

RPS Connector Systems

- ☐ AT-8024M
- ☐ AT-8016F/SC
- ☐ AT-8016F/MT

Description

The RPS connector on the back panel of the switch connects to the optional AT-RPS3004 redundant power supply unit, shown in Figure 11. The unit can provide power to the switch in the event the switch's internal power supply should fail.

The AT-RPS3004 redundant external power supply comes with one pre-installed AT-PWR3004 Power Module and has three empty slots for additional power modules. Each power module can support one switch, making the AT-RPS3004 unit capable of supporting up to four switches simultaneously.

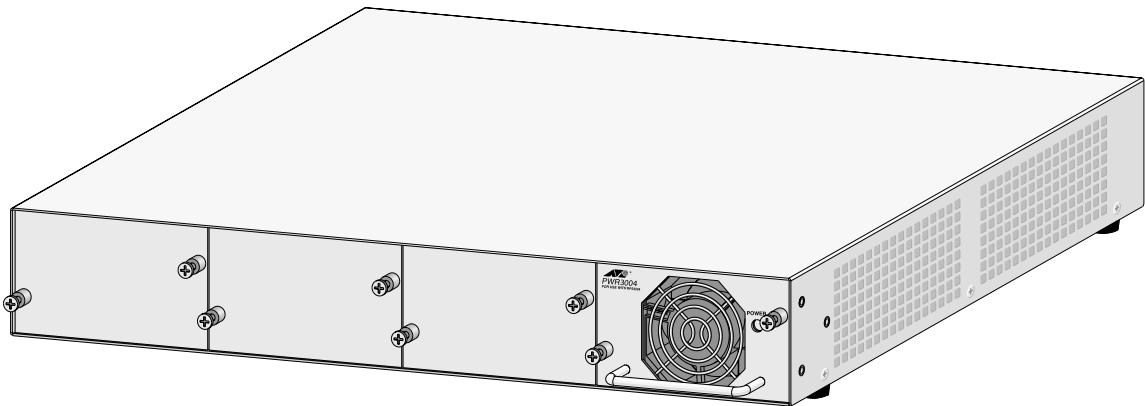


Figure 11 AT-RPS3004 Redundant Power Supply Unit

**AC Power
Connector**

Systems

- ☐ All models

Description

The switch has a single AC power supply socket on the back panel, which has autoswitch AC inputs. Refer to **Appendix A, Technical Specifications**, for the input voltage range. To power ON or OFF the switch, you connect or disconnect the power cord.

Software Features

The following sections describe these software features:

- ☐ AT-S39 Management Software
- ☐ Enhanced Stacking
- ☐ Spanning Tree Protocol (STP)
- ☐ Tagged and Port-based Virtual LANs (VLANs)
- ☐ Basic VLAN Mode
- ☐ Quality of Service
- ☐ BOOTP and Dynamic Host Configuration Protocol (DHCP)
- ☐ Port Mirroring
- ☐ Port Trunking
- ☐ Port Security

Note

All of the features described here are further described in the **AT-S39 Management Software User's Guide**.

AT-S39 Management Software

The AT-8000 Series Fast Ethernet Switches come with the AT-S39 management software pre-installed. You use the software to manage and configure the switch.

The management software comes with default values for all the operating parameters for a switch. In some network environments, the default settings might not need to be changed. If this is true for your network, then you can use the switch as an unmanaged switch.

However, to manage the switch and change or monitor the operating parameters, you must access the management software. Some of the management functions that you can perform include assigning the switch an IP address and subnet mask, creating VLANs and port trunks, and activating and configuring the Spanning Tree Protocol parameters.

The management software's interface consists of menus and prompts that make it easy for you to configure the switch and view performance and status information. The management software also features a command line interface for configuring the switch via command line commands.

You can access the switch's management software four ways:

- ☐ RS-232 Terminal Port
- ☐ Web Browser
- ☐ Telnet Application Protocol
- ☐ SNMP management program

RS-232 Terminal Port

One method for accessing the management software is by connecting a terminal or a PC with a terminal emulation program to the RS-232 Terminal Port on the switch. This is commonly referred to as local or out-of-band management. (Refer to Figure 13.)

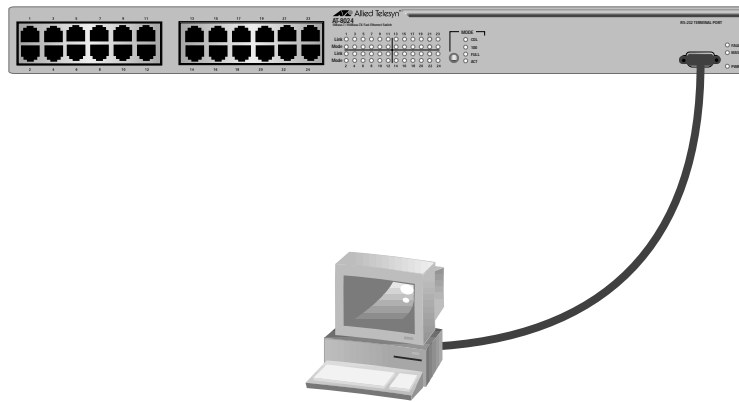


Figure 12 Local Management

Once the session is established, the management software's main menu is displayed on the terminal's screen, as shown in Figure 13.

```

Allied Telesyn AT-8024GB Ethernet Switch
Login Session: Manager

Main Menu

1 - Port Menu
2 - VLAN Menu
3 - Spanning Tree Menu
4 - Administration Menu
5 - System Config Menu
6 - MAC Address Tables
7 - Ethernet Statistics
8 - Diagnostics
9 - Enhanced Stacking
A - Command Line Interface

R - Previous Menu

Enter your selection:
    
```

Figure 13 AT-S39 Main Menu - Local Management Session

Web-browser

You can also manage the switch from a workstation on your network using a web browser, such as Netscape Navigator. This is referred to as remote or in-band management.

To start a web browser management session, you simply enter the switch's IP address in the URL field of the web browser, as shown in Figure 14.



Figure 14 URL Field of a Web Browser

Figure 15 shows the AT-S39 management software's home page.



Figure 15 Web Browser Management Home Page

Telnet Application Protocol

The Telnet application protocol offers another way for you to remotely manage a switch from a workstation on your network. Starting this type of remote access requires that you specify the IP address of the switch in the Telnet protocol.

This method of managing the switch will work only after you have assigned the switch an IP address and subnet mask or have implemented the enhanced stacking feature.

SNMP Management

You can also remotely manage a switch with an SNMP management program, such as HP Openview. This management method requires loading the AT-8000 Series Fast Ethernet Switch MIBs onto the workstation from where you intend to manage the switch and that you compile the MIBs with a MIB compiler.

The MIB standards supported by this switch include:

- ☐ RFC 1213 (MIB II)
- ☐ RFC 1215 (TRAP MIB)
- ☐ RFC 1493 (Bridge MIB)
- ☐ RFC 1643 (Ethernet MIB)
- ☐ RFC 1573 (Interface Group MIB)
- ☐ RFC 2674 (IEEE 802.1Q MIB)
- ☐ Allied Telesyn International (ATI) Enterprise MIB

Note

The MIBs for the AT-8000 Series Fast Ethernet Switches are available from the Allied Telesyn web site.

Enhanced Stacking

This feature is designed to simplify network management. You can use the feature to manage all the AT-8000 Series Fast Ethernet Switches that reside in a subnet on your network from just one management session.

Before the advent of enhanced stacking, managing a switch meant that you had to establish a separate management session with it. This often involved going to the wiring closet where the switch was located and establishing the session through the RS232 management port on the switch.

If you wanted to manage your switches remotely from a workstation on your network using the Telnet application protocol or a web browser, you had to assign each switch a unique IP address. And when you were finished managing one switch, you had to end the management session in order to manage another switch, even if the switches were in the same subnet.

The enhanced stacking feature simplifies all this. The benefits of this feature include:

- ☐ You can manage all the AT-8000 Series switches in a subnet from one management session, even if the switches are physically separated by large distances. This eliminates the need of having to initiate a separate management session with each switch.
- ☐ The AT-8000 Series Switches in a subnet can share the same IP address, reducing the number of IP addresses that you need to assign to the network devices that you want to manage from a remote workstation.
- ☐ Remotely managing a new switch in your network is simplified. Once the switch is connected to the network, the stacking feature will detect the switch, allowing you to immediately begin to manage it from any workstation in your network.

Here are a few guidelines to keep in mind when planning this feature for your network:

- ☐ There can be only one stack in each subnet in your network.
- ☐ A stack cannot span subnets.
- ☐ There must be at least one AT-8000 Series Switch in each subnet with an IP address and subnet mask.
- ☐ To initiate a management session on the AT-8000 Series Switches in a subnet, you start it on a switch that has the IP address. Once the session is started, you have management access to all the AT-8000 Series Switches in the subnet.

- ❑ For purposes of redundancy, it is probably a good idea to assign IP addresses to two switches in each subnet. In this way, should you need to remove one switch with an IP address from a subnet, such as for maintenance, the second switch will still be available for you to remotely manage your Fast Ethernet switches.

Figure 16 illustrates the enhanced stacking feature. The figure illustrates a network consisting of two subnets. Subnet A has eight AT-8000 Series Switches and Subnet B has six switches. Two switches in each subnet have been assigned unique IP addresses.

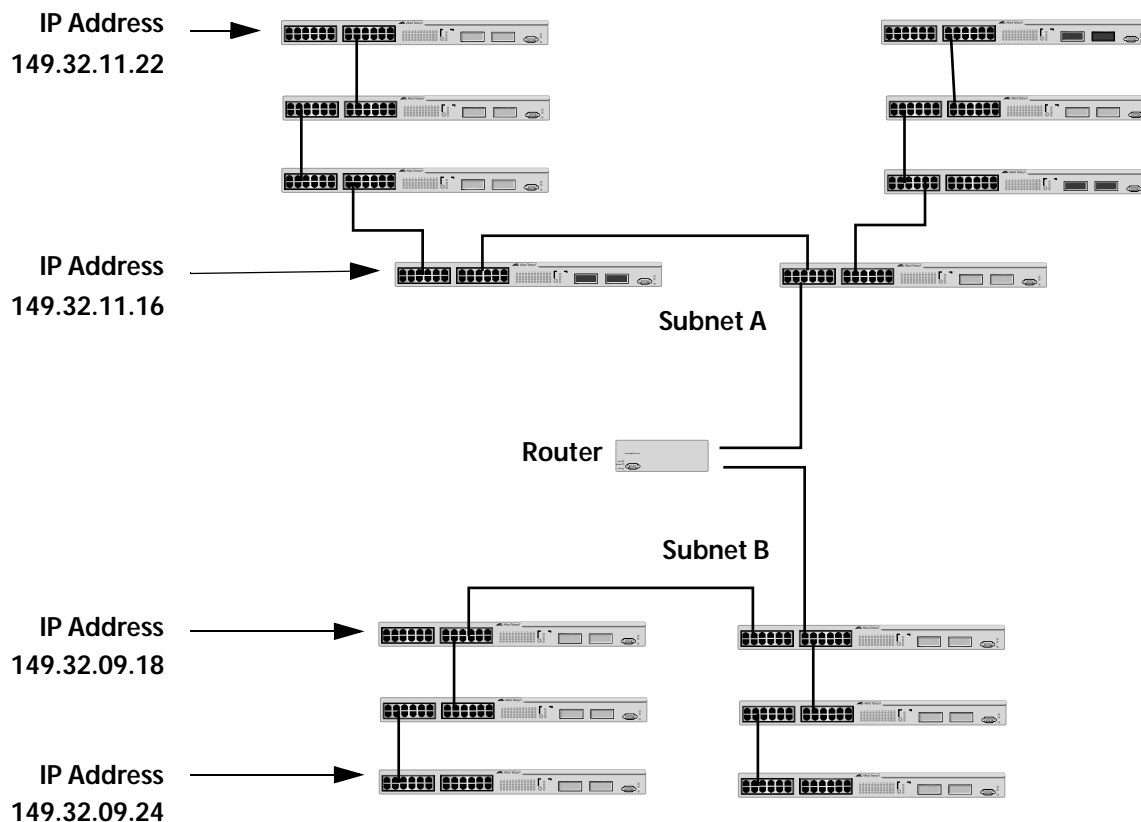


Figure 16 Enhanced Stacking

To manage the switches of a particular subnet, the network administrator can establish either a local or remote management session with a switch that has an IP address in that particular subnet. Once the session is established, the administrator has full management access to all the AT-8000 Series Switches in the same subnet.

Spanning Tree Protocol (STP)

The AT-8000 Series Fast Ethernet Switches are IEEE 802.1D standard-compliant and support the spanning tree protocol. STP can be an important part of large networks where loops exist in the network topology.

A loop occurs when two or more nodes on your network can transmit data to each other over more than one link. Network loops can seriously impact network performance because packets can become caught in repeating cycles, often referred to as broadcast storms, that needlessly consume network bandwidth and reduce network performance.

STP addresses this problem by ensuring that there is only one path between the end nodes. Where multiple paths exist, STP places the extra paths in a redundant or standby mode, leaving only one main active path. The redundant paths can be activated by STP if the main path goes down. So not only does STP guard against multiple links between end nodes, but it also activates backup redundant paths in case a main link fails.

STP is disabled by default on the AT-8000 Series Fast Ethernet Switches.

Note

These Fast Ethernet Switches support only one STP domain. All virtual LANs that you create will be members of that STP domain.

Tagged and Port-based VLANs

A VLAN is a group of end nodes that form an independent subnetwork. Each VLAN constitutes a separate broadcast domain, where the frames of a VLAN are not allowed to cross the VLAN boundary.

VLANs can be extremely useful in improving network performance and increasing network security. You can create VLANs to group the workstations, servers, and other networking equipment connected to your switches into logical workgroups. These VLAN groupings can be based on similar data needs or security requirements. When networking devices, such as workstations and servers, are grouped into a VLAN, data is exchanged between only those members of the group.

Other advantages of VLANs include:

- ☐ You can group workstations logically or functionally, regardless of their physical location on the network.
- ☐ You can change VLAN memberships anytime by software configuration without moving the workstations physically or having to move cables from one port to another on the switch.
- ☐ With VLAN tagging, network servers or other network resources can be shared among several VLANs without loss of data isolation or security.
- ☐ A VLAN can consist of ports limited to a single switch or ports from multiple switches. This allows you to group together network devices that, though physically separated by large distances, will function as if they are a part of the same physical LAN.

The AT-8000 Series Fast Ethernet Switches support two types of VLANs:

- ☐ Port-based VLANs
- ☐ Tagged VLANs

The Fast Ethernet switches come configured with one port-based VLAN, called the Default_VLAN. All ports on the switch are members of this VLAN.

Basic VLAN Mode

These Fast Ethernet switches support a special VLAN configuration referred to as Basic VLAN Mode. When the Basic VLAN Mode is activated, the switch forwards frames based only on MAC addresses. All VLAN information, including port VLAN identifiers (PVIDs) and VLAN tags, is ignored. Tagged frames are analyzed only for priority level.

Quality of Service (QoS)

The AT-8000 Series Fast Ethernet Switches support the IEEE 802.1p standard and Quality of Service. QoS can be important in network environments where there are time-critical applications, such as voice transmission or video conferencing, that can be adversely affected by packet transfer delays.

Prior to QoS, network traffic was handled in a best-effort manner. File transfer delays did occur, but were mostly transparent to network users. But with the introduction of time-critical applications, packet transfer delays can impact performance. For example, delays in packets carrying voice transmission can result in poor audio quality.

The QoS feature was designed to address this problem. With it, Ethernet frames can be assigned different priorities. The switch uses the priorities when determining which frames to forward first. Frames from end-nodes running time-critical applications can be given a high priority, and so are forwarded by the switch ahead of less time-critical frames.

BOOTP and Dynamic Host Configuration Protocol (DHCP)

These application protocols were developed to simplify network management. They are used to automatically assign IP configuration information to the devices on your network, such as an IP address, subnet mask, and, in some instances, a default gateway address.

The Fast Ethernet switches support these protocols and can obtain their IP configuration information from a BOOTP or DHCP server on your network. If you activate this feature, the switch will seek its IP address and other IP configuration information from a BOOTP or DHCP server on your network. Naturally, for this to work there must be a BOOTP or DHCP server residing on your network and you must configure the service by entering in the switch's MAC address.

Most BOOTP and DHCP services allow you to specify how the IP address is to be assigned to the switch. Choices are static and dynamic. If you choose static, the server will always assign the same IP address to the switch when the switch is reset or powered on. If you choose dynamic, the server will assign any unused IP address that it has not already assigned to another device.

Note

The BOOTP and DHCP option is disabled by default on the switch.

Port Mirroring

The port mirroring feature allows you to unobtrusively monitor the traffic being received and transmitted on a port on a switch by having the traffic copied to another switch port. You can connect a network analyzer to the port functioning as the mirror port to monitor the traffic without impacting network performance or speed.

Port Trunking

Port trunking is an economical way for you to increase the bandwidth between two Ethernet switches. A port trunk is 2, 3, or 4 ports that have been grouped together to function as one logical path. A port trunk increases the bandwidth between switches and is useful in situations where a single physical data link between switches is insufficient to handle the traffic load.

Below are the guidelines to follow when planning a port trunk:

- ❑ The switch can support one port trunk at a time.
- ❑ A port trunk can consist of 2, 4, or 8 twisted pair ports.
- ❑ The duplex mode, speed, and flow control settings must be the same for all of the ports in a trunk.
- ❑ The ports of a port trunk must be members of the same VLAN. A port trunk cannot consist of ports that are members of different VLANs.
- ❑ When cabling a trunk, the order of the connections should be maintained on both nodes. The lowest numbered port in a trunk on the switch should be connected to the lowest numbered port of the trunk on the other device, the next lowest numbered port on the switch should be connected to the next lowest numbered port on the other device, and so on.

For example, assume that you are connecting a trunk between two AT-8024 switches. On the first AT-8024 switch you had chosen ports 12, 13, 14, 15 for the trunk. On the second AT-8024 switch you had chosen ports 21, 22, 23, and 24. To maintain the order of the port connections, you would connect port 12 on the first AT-8024 switch to port 21 on the second AT-8024, port 13 to port 22, and so on.

- ❑ The ports of a port trunk must be of the same medium type. For example, they can be all twisted pair ports or all fiber optic ports.

- ❑ You can create a port trunk of the GBIC modules installed in the Port A and Port B slots of an AT-8024GB Switch, provided that the GBIC modules are of the same medium type.
- ❑ You can create a port trunk using the two fiber optic ports in an AT-8026FC Switch.
- ❑ The ports on the end node must also be configured as a port trunk.



Caution

Do not connect the cables of a port trunk to the switch until after you have created the port trunk using the switch's management software. Connecting the cables before the port trunk has been configured will create a data loop in your network topology, and that could adversely affect network performance.

Figure 17 illustrates an example of a port trunk. Two AT-8024 Fast Ethernet Switches are interconnected with a port trunk consisting of four data links.

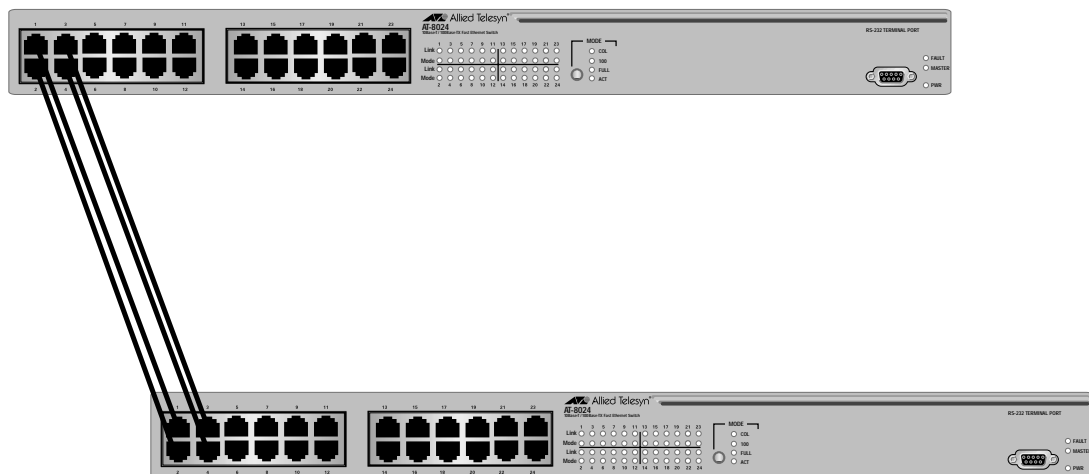


Figure 17 Port Trunk

Port Security

The AT-8000 Series Fast Ethernet Switches have three levels of port security: Limited, Secure, and Lock All Ports. You can use the port security levels to enhance the security to your network. The security levels are briefly described below. For further information and instructions on activating a security level, refer to the **AT-S39 Management Software User's Guide**.

Limited

You can use this security level to manually specify the maximum number of dynamic MAC addresses a port on the switch can learn. Once a port has learned its maximum limit of MAC addresses, it will discard any frames that it receives with a source MAC address not already learned and stored in the MAC address table.

This security level can prevent unauthorized individuals from connecting to your network and gaining access to network resources. For example, if a switch port is connected to an Ethernet hub with four workstations attached, you can configure the switch port to learn only four MAC addresses. Once those addresses are learned, any one else attempting to connect to the network through the Ethernet hub would be denied access.

Secure

This security level forwards frames based only on static MAC addresses. When this security level is activated, the switch deletes all dynamic MAC addresses and disables the MAC address table so that no new addresses can be learned.

You must specify the static MAC addresses of the nodes whose frames the switch should forward. The switch will forward frames only from those nodes whose MAC addresses you enter in the static MAC address table. Any node whose MAC address is not in the static MAC address table will not be able to send frames through the switch.

Lock All Ports

This security level causes the switch to immediately stop learning new dynamic MAC addresses. The switch forwards frames based on the dynamic MAC addresses that it has already learned and any static MAC addresses that the network administrator has entered.

A Few Basics to Ethernet Switching

An Ethernet switch interconnects network devices, such as workstations, printers, routers, and other Ethernet switches, so that they can communicate with each other by sending and receiving Ethernet frames.

MAC Address Table

Every hardware device on your network has a unique MAC address. This address is assigned to the device by the device's manufacturer. For example, when you install a network interface card (NIC) in a computer so that you can connect it to the network, the NIC already has a MAC address assigned to it by its manufacturer.

The AT-8000 Series Fast Ethernet Switches contain a 4 kilobyte MAC address table. The switches use the table to store the MAC addresses of the network nodes connected to the ports, along with the port number on which each address was learned.

A switch learns the MAC addresses of the end nodes by examining the source address of each packet received on a port. It adds the address and port on which the packet was received to the MAC table if the address had not already been entered in the table. The result is a table that contains all the MAC addresses of the devices that are connected to the switch's ports, and the port number where each address was learned.

When the switch receives a packet, it also examines the destination address and, by referring to its MAC address table, determines the port on which the destination node is connected. It then forwards the packet to the appropriate port and on to the end node. This increases network bandwidth by limiting each frame to the appropriate port when the intended end node is located, freeing the other switch ports for receiving and transmitting data.

If the switch receives a packet with a destination address that is not in the MAC address table, it floods the packet to all the ports on the switch. If the ports have been grouped into virtual LANs, the switch floods the packet only to those ports which belong to the same VLAN as the port on which the packet was received. This prevents packets from being forwarded into inappropriate LAN segments, increasing network security. When the destination node responds, the switch adds its MAC address and port number to the table.

If the switch receives a packet with a destination address that is on the same port on which the packet was received, it discards the packet without forwarding it on to any port. Since both the source node and the destination node for the packet are located on the same port on the switch, there is no reason for the switch to forward the packet.

Duplex Mode

Duplex mode refers to how an end node receives and transmits data. If an end node can receive or transmit data, but not both simultaneously, the end node is operating in what is referred to as half-duplex mode. If an end node can both receive and transmit data simultaneously, the node is said to be operating in full-duplex mode. Naturally, a node capable of operating in full-duplex can handle data much faster than a node that can only operate in half-duplex mode.

The twisted pair ports on the AT-8000 Series Switch can operate in either half- or full-duplex mode. The twisted pair ports are IEEE 802.3u-compliant and will Auto-Negotiate the duplex mode setting for you. If the end node connected to a twisted pair port on the switch is capable of full-duplex operation, the switch sets the twisted pair port to full-duplex. If the end node is capable of only half-duplex, the port is set automatically to half-duplex.

By allowing the switch to configure the duplex mode for each port itself, you will not need to change the setting for a port on the switch should you replace an end node with a node that has a different duplex mode capability. With Auto-Negotiation, the switch will automatically reset the port to a new duplex mode setting for you.

If desired, Auto-Negotiation on the switch ports can be disabled so that you can set the duplex mode manually through the switch's management software.

Store and Forward

These Fast Ethernet Switches use store and forward as the method for receiving and transmitting frames. When a Ethernet frame is received on a switch port, the switch does not retransmit the frame out the destination port until it has received the entire frame and stored the frame in a port buffer. It then examines the frame to determine if it is a valid frame. Invalid frames, such as fragments or runts, are discarded by the switch. This insures that only valid frames are transmitted out the switch ports and that damaged frames are not propagated on your network.

Backpressure and Flow Control

In order to maintain the orderly movement of data between the end nodes, an Ethernet switch may periodically need to signal an end node to stop sending data. This can occur under several circumstances. For example, if two end nodes are operating at different speeds, the switch, while transferring data between the nodes, might need to instruct the faster end node to stop transmitting data to allow the slower end node to catch up. An example of this would be when a server operating at 100 Mbps is sending data to a workstation operating at only 10 Mbps.

How a switch signals an end node to stop transmitting data differs depending on the speed and duplex mode of the end node and switch port. A twisted pair port operating at 100 Mbps port and half-duplex mode stops an end node from transmitting data by forcing a collision. A collision on an Ethernet network occurs when two nodes attempt to transmit data using the same data link at the same time. A collision causes end nodes to stop sending data. When the switch needs to stop a 100 Mbps, half-duplex end node from transmitting data, it forces a collision on the data link, which stops the end node. Once the switch is ready to receive data again, the switch stops forcing collisions. This is referred to as backpressure.

A port operating at 100 Mbps and full-duplex mode uses PAUSE frames, as specified in the IEEE 802.3x standard, to stop the transmission of data from an end node. Whenever the switch wants an end node to stop transmitting data, it issues this frame. The frame instructs the end node to cease transmission. The switch continues to issue PAUSE frames until it is ready again to receive data from the end node. This is referred to as flow control.

Network Topologies

This section illustrates several of the network topologies you can create with the AT-8000 Series Fast Ethernet Switches.

Power Workgroup Topology

The topology shown in Figure 18 is commonly referred to as a power workgroup topology. Each workstation or node is connected directly to a port on an AT-8024 Fast Ethernet Switch. Each node has a dedicated data link to the switch for best performance and reliability. The devices can operate at either 10 Mbps or 100 Mbps.

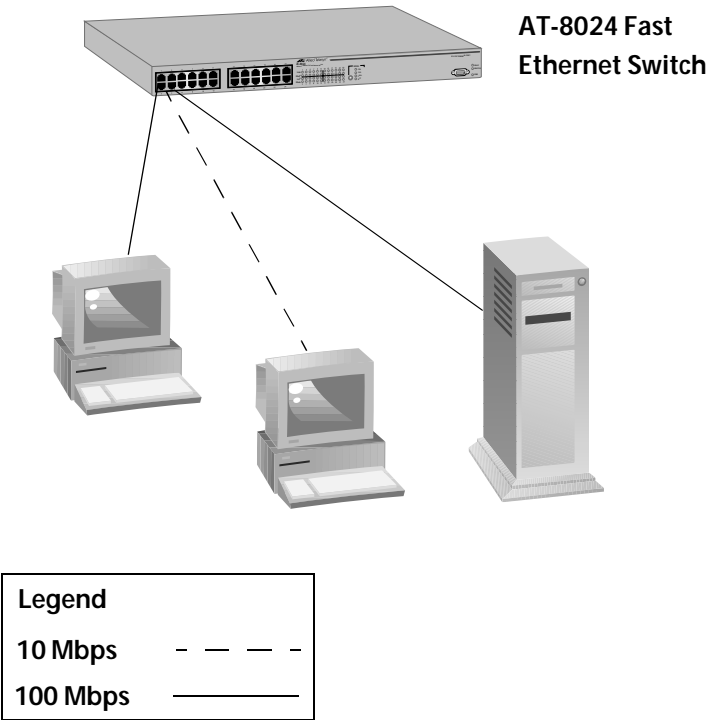


Figure 18 Power Workgroup Topology

Collapsed Backbone - Hub Topology

In the topology illustrated in Figure 19, an AT-8024 connects together 10/100 Mbps Ethernet hubs. This type of topology is often referred to as a collapsed backbone topology. The switch functions as the focal point of the network by acting as a bridge between the different workgroups. The switch transfers an Ethernet frame from hub to hub only when the destination node for the frame is on a different hub than the node that originated the frame. This reduces the amount of unnecessary data traffic in each workgroup, freeing up bandwidth and improving network performance.

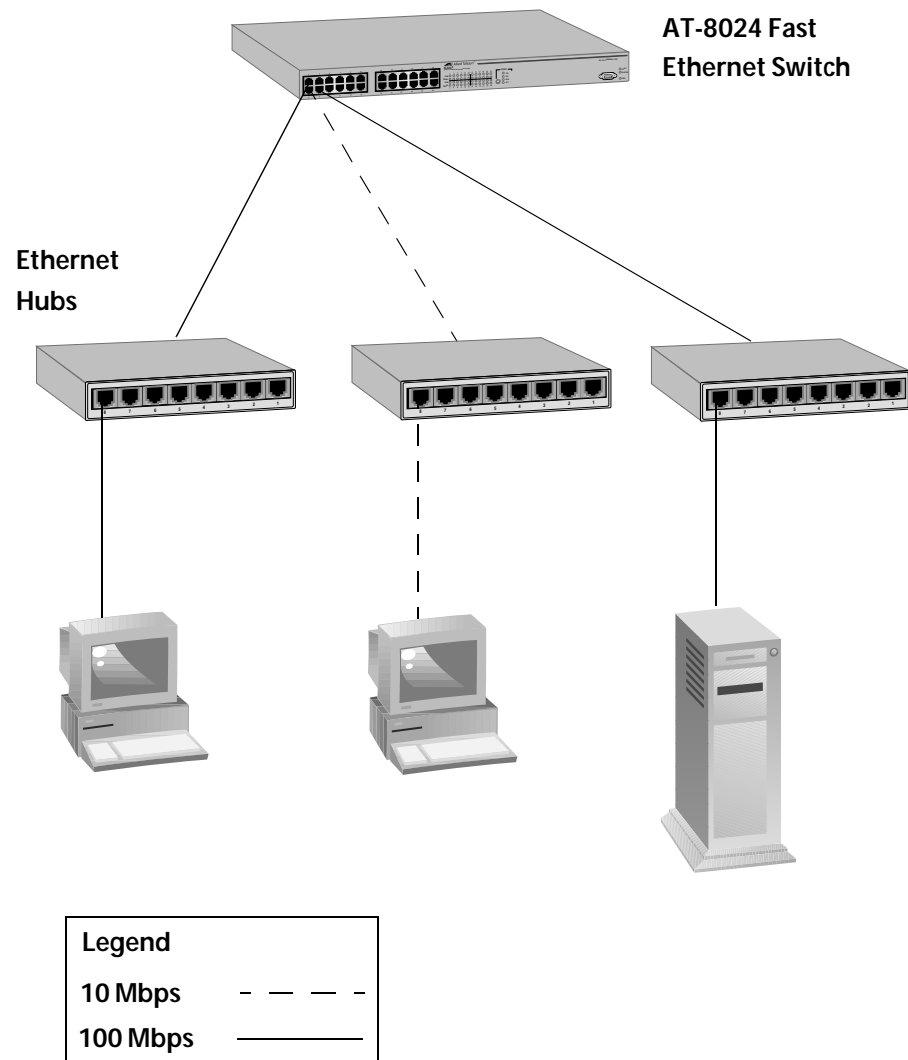


Figure 19 Collapsed Backbone - Hub Topology

Mixed Topology

You can always combine topologies as well as build a larger network by connecting different switches together. If the switches are within 100 meters of each other, you can use the twisted pair ports. If the switches are further apart, then you will need to use fiber optic ports.

Figure 20 illustrates a network of three AT-8026FC Fast Ethernet Switches. The workstations and servers of the network are connected either directly to a switch or through an Ethernet hub. The switches themselves are connected through their fiber optic ports, which have a maximum operating distance of 2 kilometers. The figure also illustrates how you can use the fiber optic ports to connect other remote devices to the network, such as remote servers and workstations.

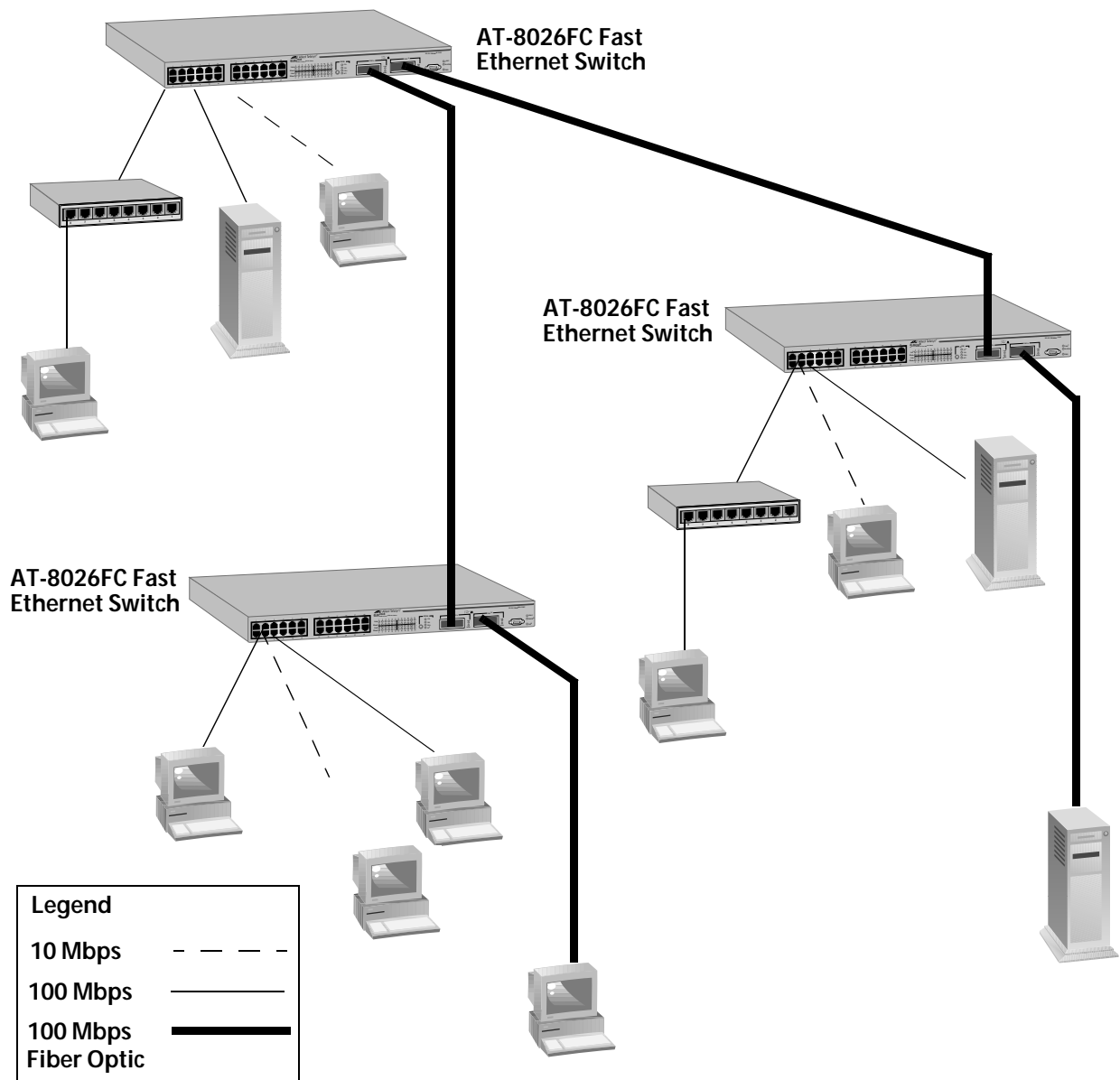


Figure 20 Mixed Topology

Collapsed Backbone - Switch Topology

If you need to connect together multiple switches and the switches are physically separated by more than 2 kilometers, or if you want to build a 1000 Mbps backbone network between switches, you can use AT-8024GB Fast Ethernet Switches and install fiber optic GBIC modules. The modules span large distances and, with an operating speed of 1000 Mbps, can provide a fast backbone between the switches.

Figure 21 illustrates another collapsed backbone topology, this time using a high speed, fiber optic 1000Base Ethernet switch as the focal point. Six AT-8024GB Ethernet Switches, each with a GBIC module, are interconnected via the Gigabit Ethernet switch.

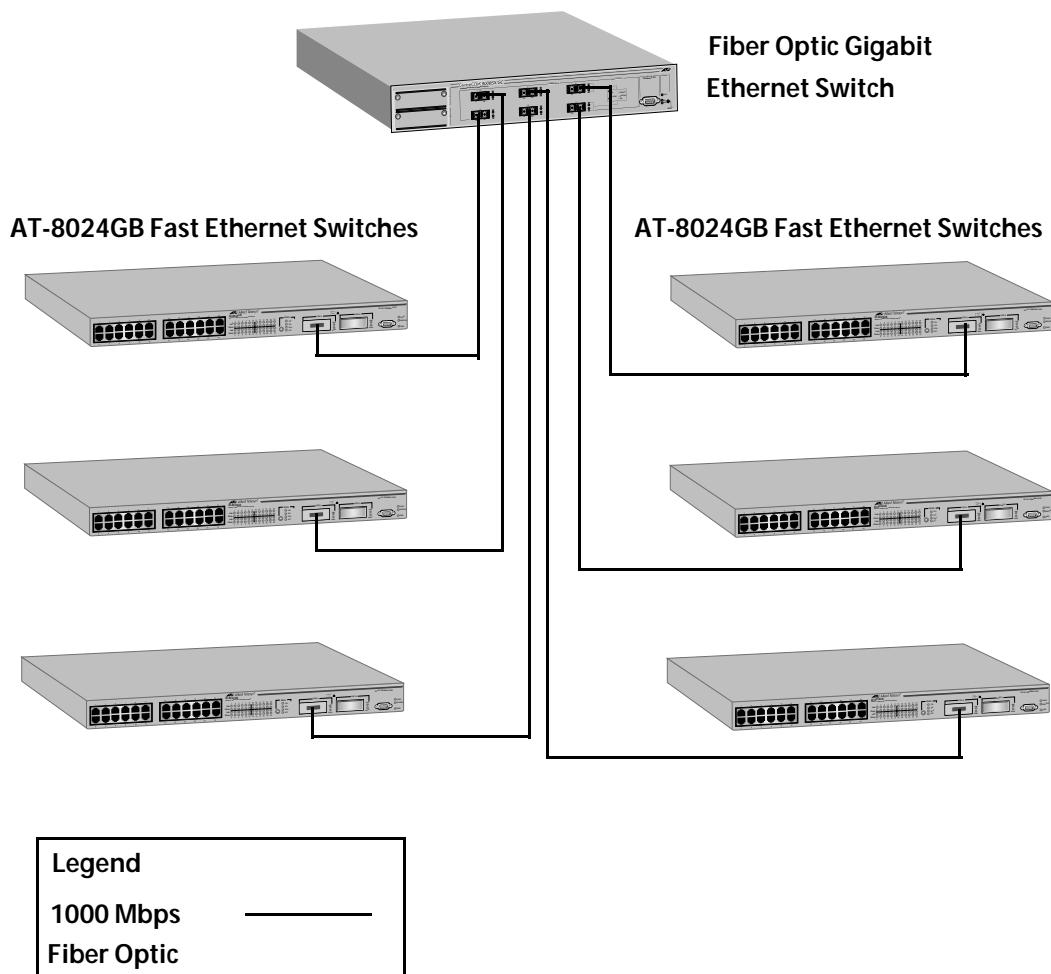


Figure 21 Collapsed Backbone - Switch Topology

Chapter 2

Installation

This chapter contains the installation procedures for the switch. The chapter contains the following sections:

- ❑ **Reviewing Safety Precautions** on page 51
- ❑ **Selecting a Site for the Switch** on page 52
- ❑ **Planning the Installation** on page 53
- ❑ **Unpacking the Switch** on page 55
- ❑ **Installing the Switch in a Rack** on page 56
- ❑ **Installing an Optional GBIC Module** on page 58
- ❑ **Installing an Optional Expansion or Stacking Module** on page 60
- ❑ **Installing an Optional AT-RPS3004 Redundant Power Supply** on page 63
- ❑ **Cabling and Powering On the Switch** on page 66
- ❑ **Starting a Local Management Session** on page 71
- ❑ **Warranty Registration** on page 74

Reviewing Safety Precautions

Please review the following safety precautions before you begin to install the switch or any of its components. Refer to **Appendix C** for translated safety statements in your language. (The laser warnings apply only to Fast Ethernet switches that have a fiber optic port.)



Laser

Class 1 laser product. 6



Laser

Do not stare into the laser beam. 7



Warning

Electric Shock Hazard: To prevent electric shock, do not remove the cover. There are no user-serviceable parts inside. The unit contains hazardous voltages and should only be opened by a trained and qualified technician. 8



Warning

Lightning Danger: Do not work on this equipment or cables during periods of lightning activity. 9



Warning

Power cord is used as a disconnection device: To de-energize equipment, disconnect the power cord. 10



Warning

Electrical-Type Class 1 Equipment: This equipment must be earthed. The power plug must be connected to a properly wired earth ground socket outlet. An improperly wired socket outlet could place hazardous voltages on accessible metal parts. 11



Caution

Pluggable Equipment: The socket outlet should be installed near the equipment and should be easily accessible. 12



Caution

Air vents: The air vents must not be blocked on the unit and must have free access to the room ambient air for cooling. 13



Caution

Operating Temperature: This product is designed for a maximum ambient temperature of 40°C. 14



Caution

All Countries: Install this product in accordance with local and National Electric Codes. 15

Selecting a Site for the Switch

Observe the following requirements when choosing a site for your switch:

- ☐ If you plan to install the switch in an equipment rack, check to be sure that the rack is safely secured and that it will not tip over. Devices in a rack should be installed starting at the bottom, with the heavier devices near the bottom of the rack.
- ☐ If you are installing the switch on a table, be sure that the table is level and secure.
- ☐ The power outlet for the switch should be located near the unit and should be easily accessible.
- ☐ The site should provide for easy access to the ports on the front of the switch. This will make it easy for you to connect and disconnect cables, as well as view the switch's LEDs.
- ☐ To allow proper cooling of the switch, air flow around the unit and through its vents on the side and rear should not be restricted.
- ☐ Do not place objects on top of the switch.
- ☐ Do not expose the switch to moisture or water.
- ☐ Make sure that the site is a dust-free environment.
- ☐ You should use dedicated power circuits or power conditioners to supply reliable electrical power to the network devices.

Planning the Installation

Table 6 contains the cabling specifications for the twisted pair ports.

Table 6 Twisted Pair Cabling and Distances

Model	Speed	Type of Cable	Maximum Distance
AT-8024, AT-8024GB, AT-8024M, and AT-8026FC	10 Mbps	Category 3 or better 100-ohm shielded or unshielded twisted pair cable	100 m (328 ft.)
	100 Mbps	Category 5 or Category 5E (Enhanced) 100-ohm shielded or unshielded twisted pair cable	100 m (328 ft.)

Note

The twisted pair ports on the switch feature auto-MDI. They are configured automatically by the switch as MDI or MDI-X when connected to an end node. Consequently, you can use either a straight-through or crossover twisted pair cable when connecting any network device to a port on the switch.

Table 7 contains the cabling specifications for the fiber optic ports.

Table 7 Fiber Optic Cabling and Distance

Model	Speed	Type of Cable	Maximum Distance
AT-8016F/MT, AT-8016F/SC, and AT-8026FC	100 Mbps	50/125 or 62.5/125 micron (core/ cladding) multimode fiber optic cable	Full-duplex mode: 2 km (1.25 mi.) Half-duplex mode: 412 m (1,360 ft)

Note

For cabling specifications for an optional GBIC module, expansion module, or stacking module, refer to the **Installation Guide** included with the option.

Unpacking the Switch

To unpack the switch, perform the following procedure:

1. Remove all components from the shipping package.

Note

Store the packaging material in a safe location. You must use the original shipping material if you need to return the unit to Allied Telesyn.

2. Place the switch on a level, secure surface.
3. Make sure the following hardware components are included in your switch package. If any item is missing or damaged, contact your Allied Telesyn sales representative for assistance.

- ☐ One AT-8000 Series Fast Ethernet Switch
- ☐ Two mounting brackets
- ☐ Eight flathead Phillips screws
- ☐ Power cord (Americas, EC, Australia, and UK only)
- ☐ Documentation CD
- ☐ Warranty card

Installing the Switch in a Rack

Perform the following procedure to install the switch in a standard 19-inch rack. If you are not installing the switch in a rack, go to the next procedure:

1. Place the unit upside down on a level, secure surface.
2. Using a flat-head screwdriver, remove the snap-on plastic feet from the bottom of the switch, as shown in Figure 22.

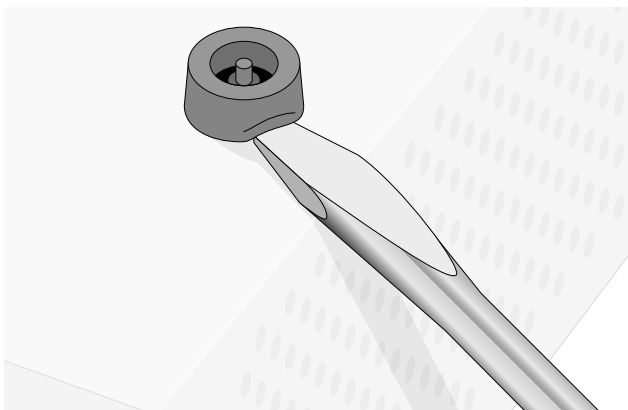


Figure 22 Removing the Feet

3. Turn the switch over.
4. Attach a rackmounting bracket to one side of the switch using four of the screws that came with the switch. See Figure 23.

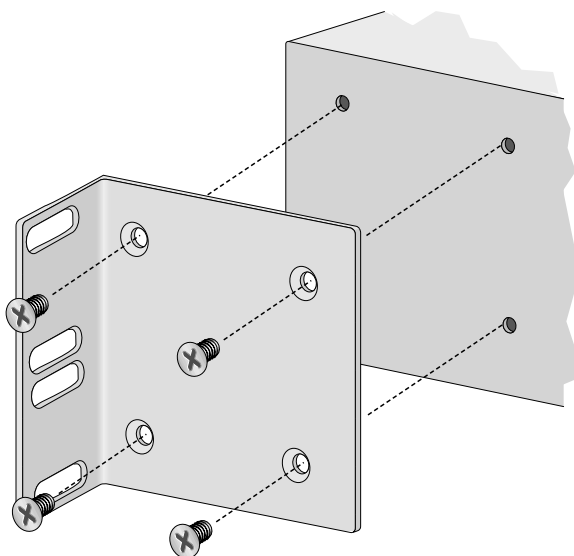


Figure 23 Attaching Rackmounting Brackets

5. Install the second rackmounting bracket on the other side of the switch using the four remaining screws.
6. Mount the switch in the 19-inch rack using standard screws (not provided).

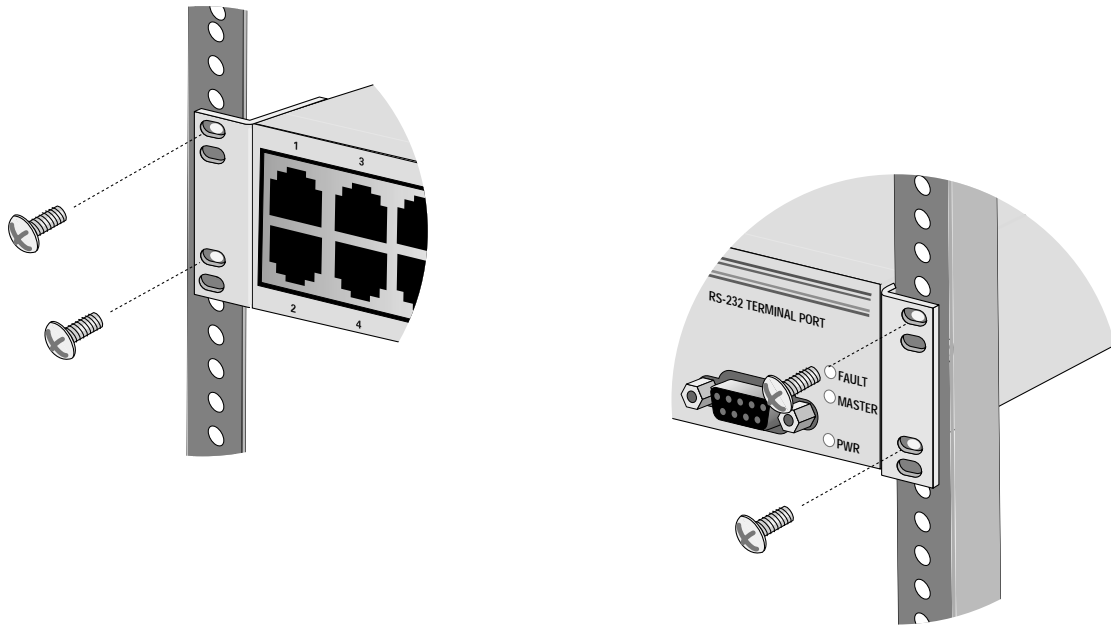


Figure 24 Mounting the Switch in a Rack

Installing an Optional GBIC Module

System

- ☐ AT-8024GB

Procedure

To install an optional GBIC module in an AT-8024GB Switch, perform the following procedure:

1. Unpack the GBIC module from its shipping container and store the packaging material in a safe location.

Note

You must use the original shipping material if you need to return the module to Allied Telesyn.



Warning

A GBIC module can be damaged by static electricity. Be sure to observe all standard electrostatic discharge (ESD) precautions, such as wearing an antistatic wrist strap, to avoid damaging the module.

2. Check that the GBIC package includes all the items listed below. If any item is missing or damaged, contact your Allied Telesyn sales representative for assistance.

- ☐ One GBIC module
- ☐ Installation Guide
- ☐ Warranty card

Note

For fiber optic cabling specifications for the module, refer to the **GBIC Installation Guide** that ships with the device.

3. Follow these guidelines to ensure the performance of your GBIC:
 - ☐ GBICs are static sensitive. To prevent electrostatic discharge damage (ESD), follow your normal board and component handling procedures.
 - ☐ GBICs are dust sensitive. When the GBIC is stored or when a fiber-optic cable is not plugged in, always keep plugs in the GBIC optical bores.
 - ☐ The most common source of contaminants in the optical bores is

debris picked up on the ferrules of the optical connectors. Use an alcohol swab or wipe to clean the ferrules of the optical connector.

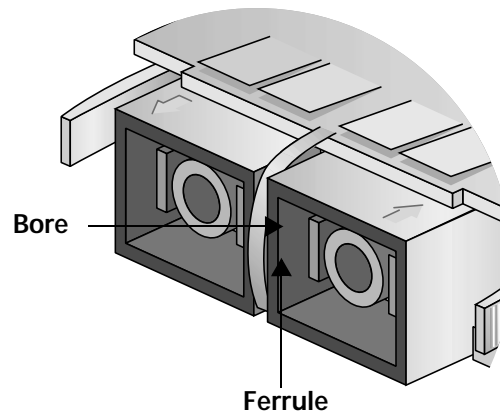


Figure 25 Optical Bore and Ferrule of GBIC Module

Note

Unnecessary removal and insertion of a GBIC could lead to premature failure.

4. Slide the GBIC module into an expansion slot on the switch. The GBIC module is completely seated in the slot when it clicks into place.

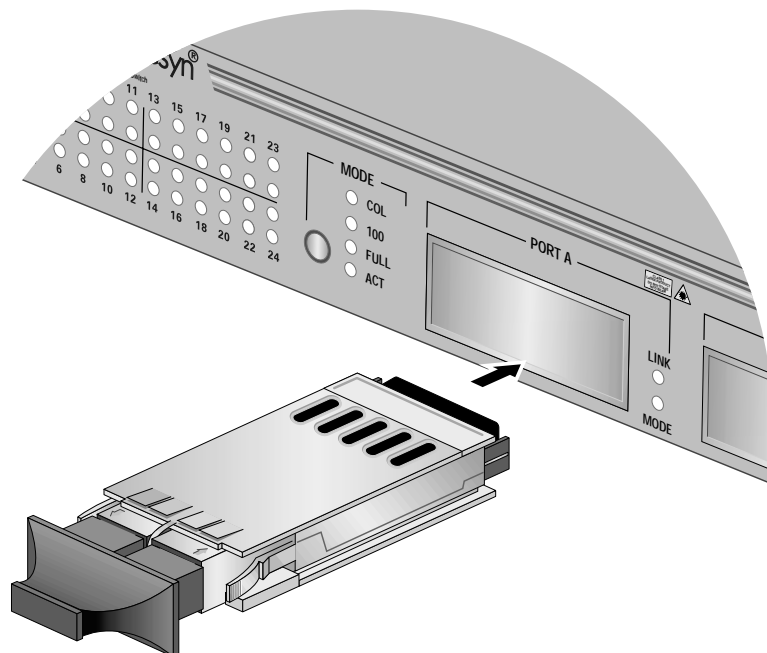


Figure 26 Installing a GBIC Module

5. If you purchased two GBIC modules for the switch, repeat this procedure to install the second module.

Installing an Optional Expansion or Stacking Module

Systems

- ☐ AT-8016F/MT
- ☐ AT-8016F/SC
- ☐ AT-8024M

Procedure

This section describes how to install an optional expansion or stacking module in the switch. The module slots are located on the left side of the front panel of the switch.

Note

The modules can be hot-swapped, meaning that you do not need to power off a switch to install these options.

To install a module, follow these steps:

1. Unpack the module from its shipping container and store the packaging material in a safe location.

Note

You must use the original shipping material if you need to return the module to Allied Telesyn.



Warning

An expansion or stacking module can be damaged by static electricity. Be sure to observe all standard electrostatic discharge (ESD) precautions, such as wearing an antistatic wrist strap, to avoid damaging the module.

2. Refer to the module's Installation Guide for a list of the items included with the option. If any item is missing or damaged, contact your Allied Telesyn sales representative for assistance.
3. Face the front panel of the switch and locate the expansion slots (left side of switch).
4. To remove the expansion slot faceplate, use a Phillips screwdriver to carefully loosen the installation screws found on the left and right sides of the faceplate, as displayed in Figure 27.

Note

If removing a module, store the device in an antistatic bag or immediately install it in another switch.

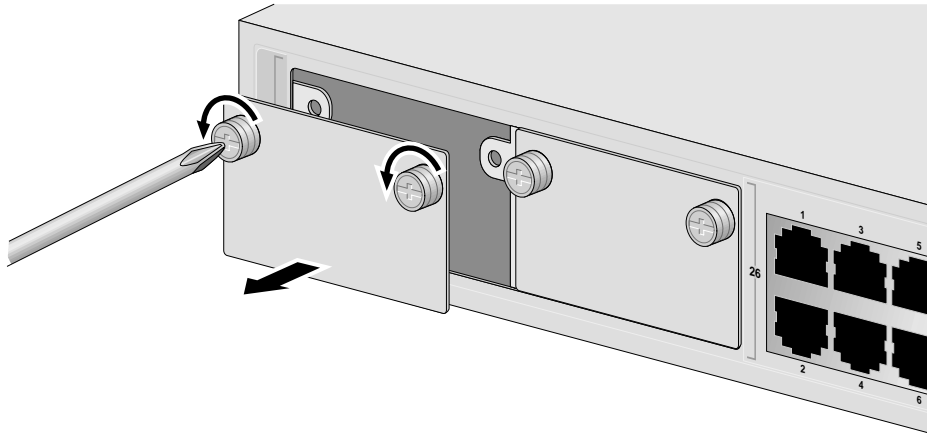


Figure 27 Removing the Expansion Slot Faceplate

5. Pull the faceplate straight out of the slot.

Keep the faceplate in a safe area in case you need to replace it on the slot again. The faceplate will keep any dust from getting into the switch and will maintain proper airflow if the slot remains empty.

6. Carefully slide the module into the slot until the module faceplate makes contact with the switch, as displayed in Figure 28. Avoid touching the module components.

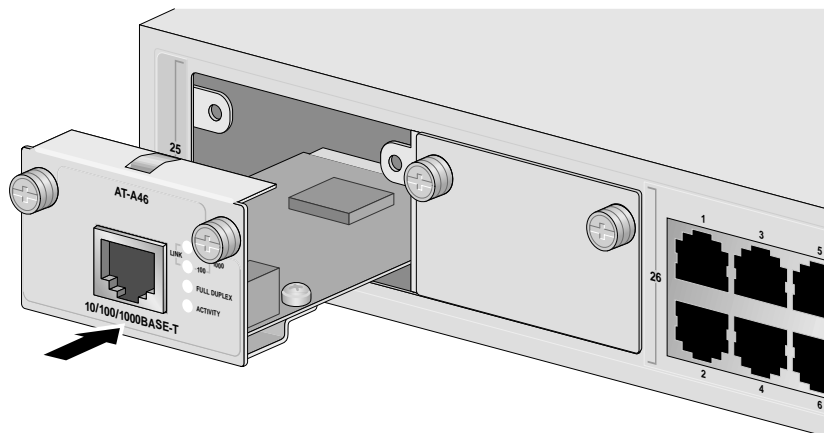


Figure 28 Installing a Module

7. Using a Phillips screwdriver, tighten the installation screws found on the module faceplate.

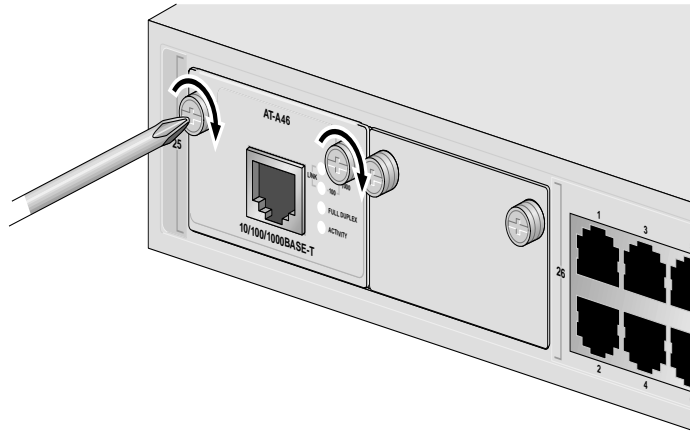


Figure 29 Tightening the Module Installation Screws



Caution

Always use the installation screws to secure the module to the switch. Leaving a module partially seated may cause the system to halt and subsequently crash.

Installing an Optional AT-RPS3004 Redundant Power Supply

Systems

- ☐ AT-8016F/MT
- ☐ AT-8016F/SC
- ☐ AT-8024M

Procedure

This section describes how to install the optional AT-RPS3004 external power supply.

The AT-RPS3004 can supply redundant power for up to four Ethernet switches. Initially, it contains one pre-installed AT-PWR3004 module. You can purchase additional power modules from your Allied Telesyn representative. Each additional AT-PWR3004 module comes with a DC power cord.

Make sure the following hardware components are included in your power supply package. If any item is missing or damaged, contact your Allied Telesyn sales representative for assistance.

- ☐ One AT-RPS3004 Power Supply Unit
- ☐ Two mounting brackets
- ☐ AC Power cord (Americas, EC, Australia, and UK only)
- ☐ 16-pin Molex DC Power Cord
(Americas, EC, Australia, and UK only)
- ☐ Installation Guide
- ☐ Warranty card

Perform the following procedure to install the power supply in a standard 19-inch rack. If you are not installing the power supply in a rack, start with Step 7.

1. Place the unit upside down on a level, secure surface.
2. Using a flat-head screwdriver, remove the snap-on plastic feet from the bottom of the power supply, as shown in Figure 30.

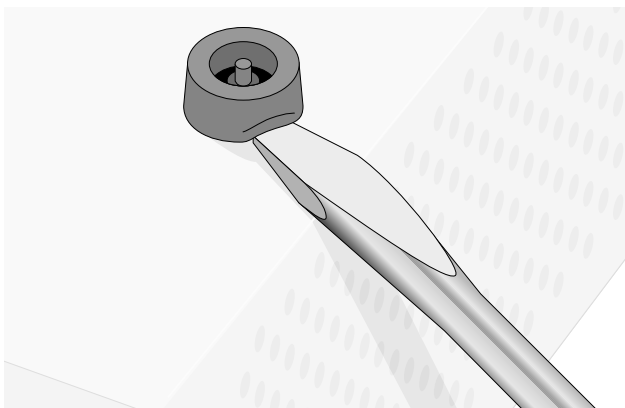


Figure 30 Removing the Feet

3. Turn the power supply over.
4. Attach a rackmounting bracket to one side of the power supply using four of the screws that came with the power supply. See Figure 31.

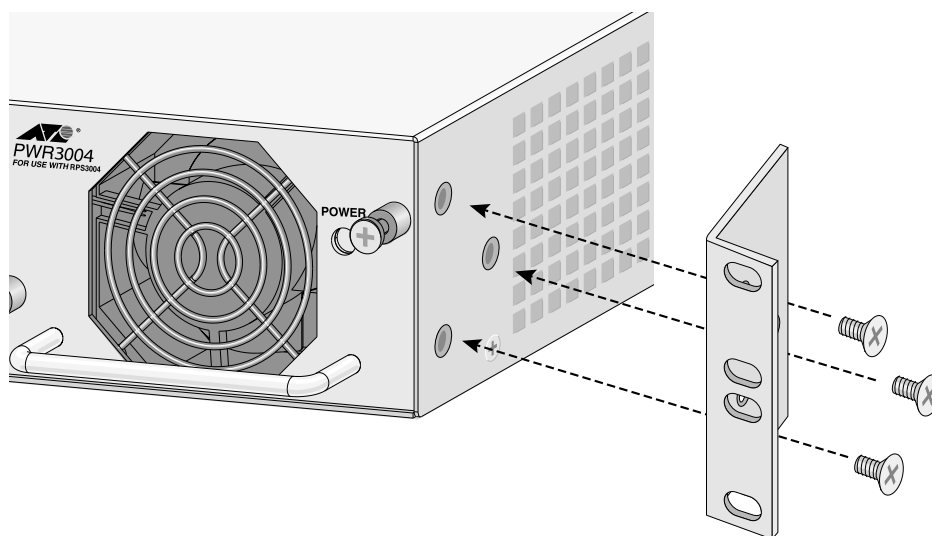


Figure 31 Attaching Rackmounting Brackets

5. Install the second rackmounting bracket on the other side of the power supply using the four remaining screws.

6. Mount the power supply in the 19-inch rack using standard screws (not provided).

Note

Ensure that air flow is unrestricted around the AT-RPS3004 unit.

7. Attach the provided DC power cord to the DC output connector on the back panel of the AT-RPS3004 power supply. Refer to Figure 32 for the DC output connector.

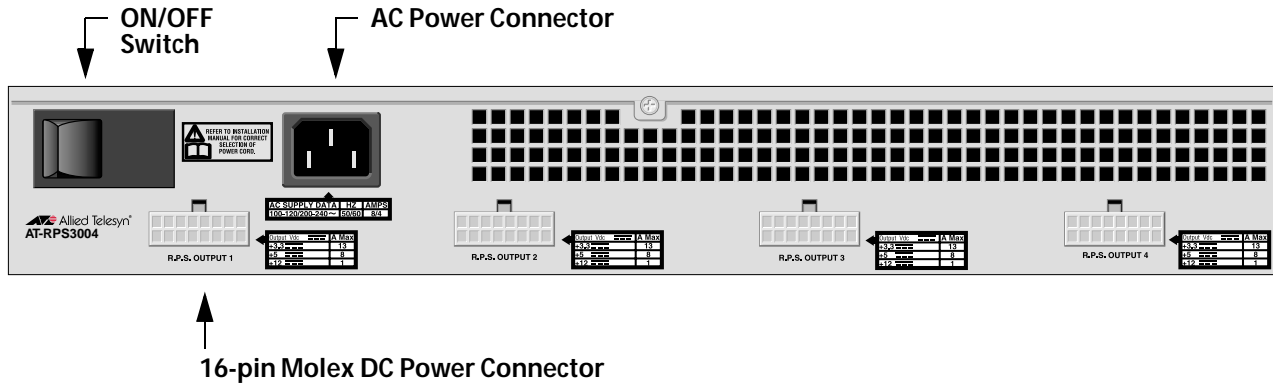


Figure 32 Back Panel of the AT-RPS3004 Unit

8. Connect the other end of the DC power cord to the RPS Input connector on the back panel of the Ethernet switch. Refer to Figure 33 for the RPS Input connector.

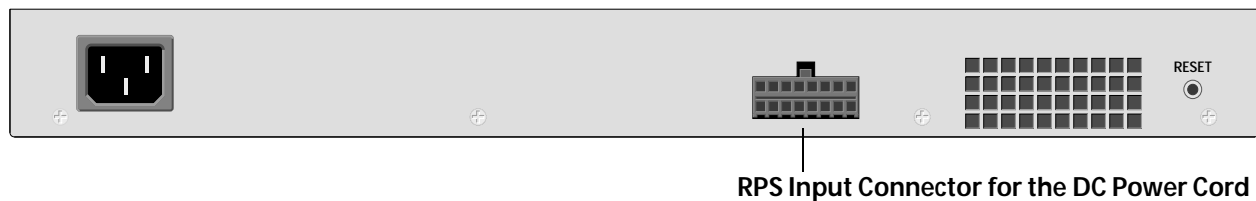


Figure 33 Back Panel of the Ethernet Switch

9. Plug the AC power cord for the AT-RPS3004 into the AC connector on the back panel of the unit. Refer to Figure 32 for the AC connector.

Note

The AT-RPS3004 unit and Ethernet switches should be connected to power outlets on separate circuits. This will protect the switches from a loss of power should a power circuit fail.

10. Plug the other end of the AC power cord into a wall outlet.
11. Turn on the AT-RPS3004 using the switch on the back panel of the unit. Refer to Figure 32 for the ON/OFF switch.
12. Make sure the LED on the front of the power supply is solid green.

Cabling and Powering On the Switch

Perform the following procedure to connect the data cables to the switch ports and to apply power to the switch.

1. If your AT-8000 Series Switch has twisted pair ports, connect the twisted pair data cables to the RJ-45 ports on the switch, as shown in Figure 34.

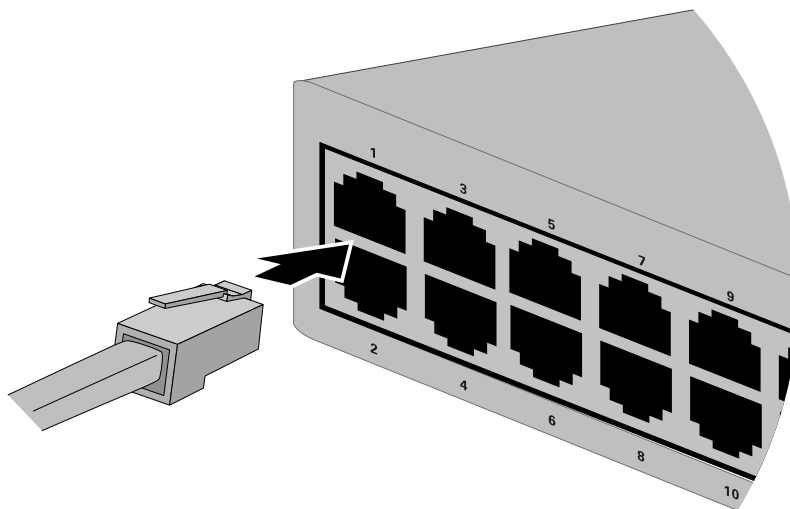


Figure 34 Connecting the Twisted Pair Data Cables

When connecting a twisted pair cable to a port, observe the following guidelines:

- ☐ An RJ-45 connector should fit snugly into the port on the switch. The tab on the connector should lock the connector into place.
- ☐ Since the ports on the switch are auto-MDI/MDI-X, you can use either straight-through or crossover twisted pair cables to connect any type of network device to a port on the switch.
- ☐ If your network topology will contain a loop where two or more network devices can communicate with each other over more than one data path, do not connect the network cables forming the loop until after you have activated the Spanning Tree Protocol (STP) on the switch. Data loops can adversely affect network performance. For instructions on how to activate STP, refer to the **AT-S39 Management Software User's Guide**.

- ❑ If you are creating a port trunk, do not connect the cables of the trunk to the switch until you have configured the trunk using the switch's management software. Connecting the trunk cables to the switch before you have configured the software will result in a data loop, which can adversely affect network performance. For instructions on how to configure a port trunk, refer to the **AT-S39 Management Software User's Guide**.
2. If your switch has fiber optic ports, remove the dust covers from the ports.

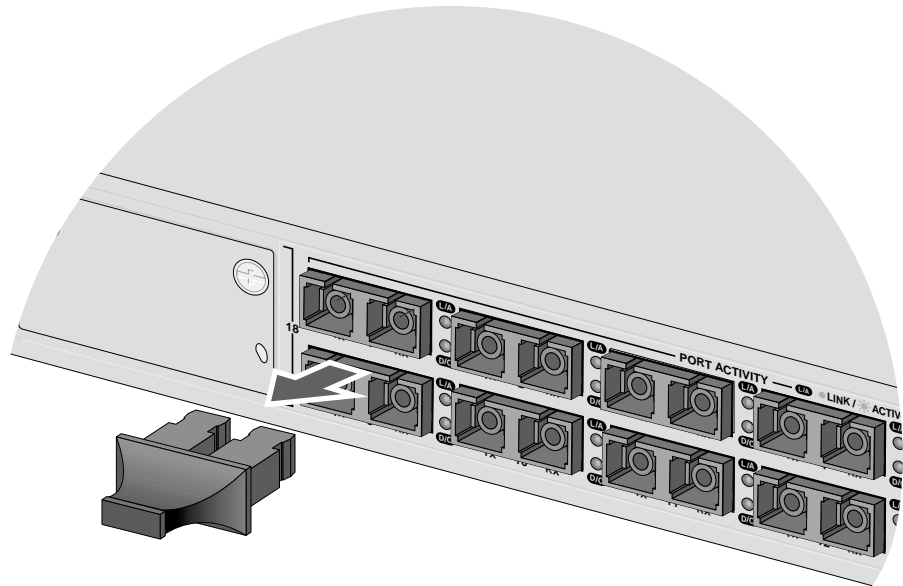


Figure 35 Removing the Dust Covers from the Fiber Optic Ports



Caution

Do not remove the dust covers if you do not intend to connect the fiber optic cables at this time. Dust contamination can adversely impact the operations of the ports.

3. Attach the fiber optic data cables to the fiber optic ports.

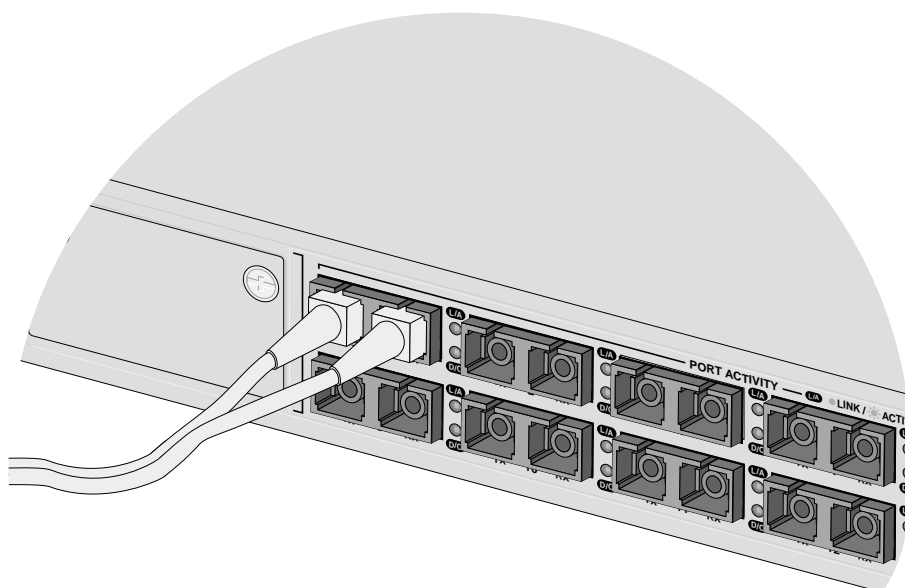


Figure 36 Attaching a Fiber Optic Cable

When attaching a fiber optic cable, be sure to observe the following guidelines:

- ☐ Be sure that the cable connector is firmly locked into place in the port.
- ☐ If the fiber optic port has a dual SC connector, be sure to connect the receiver fiber port to the transmitter port on the remote end node, and the transmitter fiber port to the receiver port on the remote node.
- ☐ You should verify that you are using the appropriate type of fiber optic cabling. For an AT-8016F Series or AT-8026FC switch, refer to **Planning the Installation** on page 53. For an optional GBIC module, refer to the **GBIC Installation Guide**. For an optional fiber optic expansion module, refer to the **Expansion Module Installation Guide**.
- ☐ You should verify that the operating specifications of the switch's fiber optic port are compatible with the fiber optic port on the remote end node. For example, you cannot connect a fiber optic port with a maximum distance of 2 kilometers and an operating wavelength of 1310 nm to another fiber optic port that has a maximum distance of 40 kilometers and an operating wavelength of 1550 nanometers (nm).

- ❑ If your network topology will contain a loop where two or more network devices can communicate with each other over more than one data path, do not connect the network cables forming the loop until after you have activated the Spanning Tree Protocol (STP) on the switch. Data loops can adversely affect network performance. For instructions on how to activate STP, refer to the **AT-S39 Management Software User's Guide**.
 - ❑ If you are creating a port trunk, do not connect the cables of the trunk to the switch until you after have configured the trunk using the switch's management software. Connecting the trunk cables to the switch before you have configured the software will result in a data loop, which can adversely affect network performance. For instructions on how to configure a port trunk, refer to the **AT-S39 Management Software User's Guide**.
4. If you installed a fiber optic or twisted pair expansion module or GBIC module, connect the data cable to the port on the module.
 5. Apply AC power to the switch by plugging the power cord into the AC power connector on the back panel of the unit and plugging the other end into a wall outlet.



Warning

The power cord is used as a disconnection device. To de-energize equipment, disconnect the power cord. ⚡ 10

As power is applied to the switch, the Fault LED (shown in Figure 37) flashes briefly as the switch loads its operating software. This process takes only a few seconds. After the switch has finished loadings its software, the Fault LED will stop flashing and remain OFF.

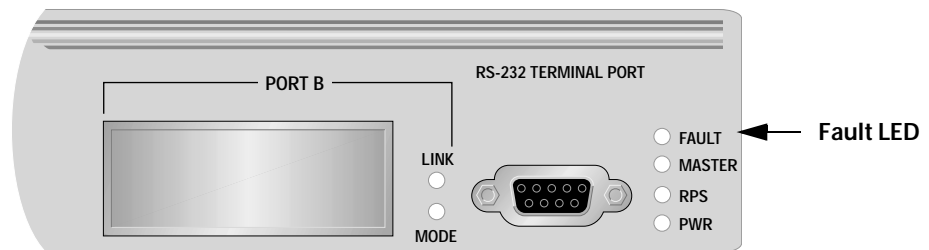


Figure 37 Fault LED

Note

Refer to the section **System LEDs** on page 26 for information on the system LEDs.

The switch is ready for network operations.

If you want to manage the switch and configure its operating parameters, go to the next procedure for instructions on how to start a local management session.

Note

No further installation steps are required if you do not need to change the default parameter settings of the switch, which are listed in **Appendix B, Default Switch Settings** on page 90. However, if you want to manage the switch, go to the next procedure to start a local management session.

Starting a Local Management Session

The procedure in this section explains how to start a local (out-of-band) management session using the RS-232 Terminal Port on the front panel of the switch. You can use a local management session to configure the switch's operating parameters and view performance and error statistics.

Note

If you have already installed an AT-8000 Series Switch on your network and configured it as a Master switch, you can begin to remotely manage the new switch that you have just installed by connecting, locally or remotely, to the Master switch and then changing to the new switch through the management software. For instructions, refer to the **AT-S39 Management Software User's Guide**.

To start a local management session, perform the following procedure:

1. Connect one end of a RS232, straight-through management cable (not provided) with a DB-9 connector to the RS-232 Terminal Port on the front panel of the switch.

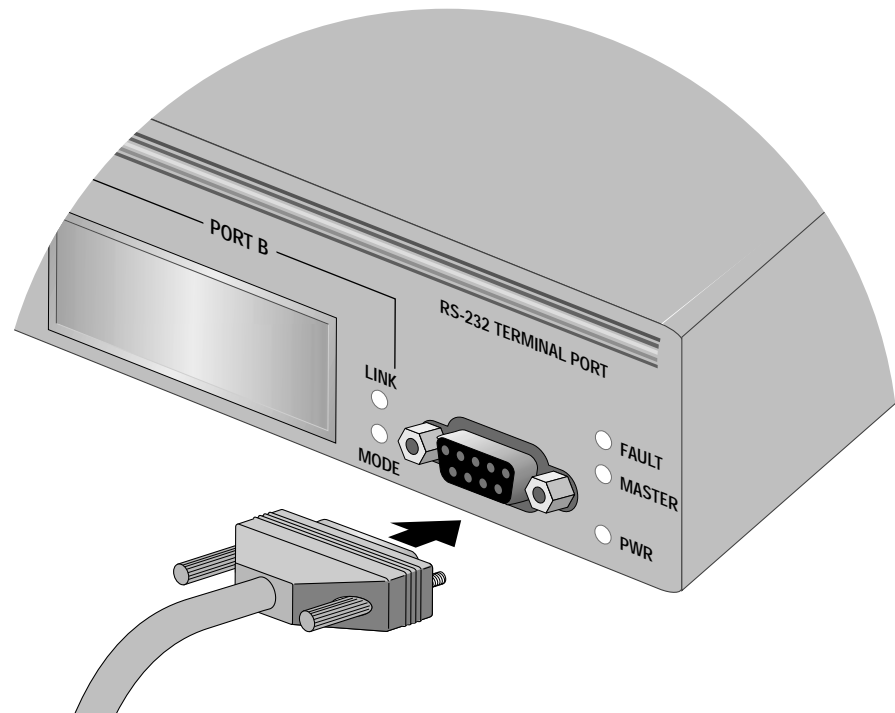


Figure 38 Connecting an RS232 Cable to the RS-232 Terminal Port

2. Connect the other end of the cable to an RS-232 port on a terminal or a personal computer with a terminal emulation program.
3. Set the terminal or the terminal emulation program to the following settings:

- ☐ Baud rate: Auto-detect (default 9600 bps; see Note below)
- ☐ Data bits: 8
- ☐ Parity: None
- ☐ Stop bits: 1
- ☐ Flow control: None

Note

The switch has an auto-detect feature that allows it to automatically determine the speed of the terminal. You can use this feature by pressing any key on your keyboard within five seconds after powering on or resetting the switch. The switch responds by determining the speed of the terminal and automatically configuring the speed of the RS232 Terminal Port accordingly. Otherwise, the switch uses a default baud rate of 9600 bits per second (bps). The switch maintains the terminal port speed until the system is again powered on or reset. The range of the port's baud rate is 1200 to 115200 bps.

Note

The port settings are for a DEC VT100 or ANSI terminal, or an equivalent terminal emulator program.

Note

During boot up, the switch displays the following prompt: `Press any key to stop image loading and go to Boot Prompt.` This message is intended for manufacturing purposes only. (If you do inadvertently display the boot prompt (`=>`), simply type **boot** and press Return to start the switch.)

4. Press the Return key twice.

You are prompted for a password.

5. To view and configure all of the switch's operating parameters, enter the password "admin". To only view the parameter settings, enter the password "friend". (The passwords are case-sensitive.)

Note

The management software has two levels of management access: manager and operator. The default password for manager access is "admin" and the default password for operator access is "friend". For further information on these management levels, refer to the **AT-S39 Management Software User's Guide**.

The Main Menu is displayed.

```
Allied Telesyn AT-8024GB Ethernet Switch
Login Session: Manager

Main Menu

1 - Port Menu
2 - VLAN Menu
3 - Spanning Tree Menu
4 - Administration Menu
5 - System Config Menu
6 - MAC Address Tables
7 - Ethernet Statistics
8 - Diagnostics
9 - Enhanced Stacking
A - Command Line Interface

R - Previous Menu

Enter your selection:
```

Figure 39 AT-S39 Main Menu - Local Management Session

If you logged in as with manager access, you can now fully manage the switch using the management interface. For instructions, refer to the **AT-S39 Management Software User's Guide**. This guide is available from the Allied Telesyn web site at www.alliedtelesyn.com.

Warranty Registration

When you have finished installing the switch, register your product by completing the enclosed warranty card and sending it in, or by visiting our web site and completing the on-line registration form.

Chapter 3

Troubleshooting

This chapter contains information on how to troubleshoot the switch in the event a problem occurs.

Note

If after following the instructions in this chapter you are unable to resolve the problem, contact Allied Telesyn Technical Support for assistance. Refer to **Contacting Allied Telesyn Technical Support** on page 10 for information on how to contact our Technical Support Department.

Check the PWR LED on the front of the switch. If the LED is OFF, indicating that the unit is not receiving power, do the following:

- ☐ Make sure that the power cord is securely connected to the power source and to the AC connector on the back panel of the switch.
- ☐ Verify that the power outlet has power by connecting another device to it.
- ☐ Try connecting the unit to another power source.
- ☐ Try using a different power cord.
- ☐ Check that the voltage from the power source is within the required levels for your region.

For twisted pair ports, verify that the LINK LED for each port is ON. If a Link LED is OFF, do the following:

- ☐ Verify that the end node connected to the port is powered ON and is operating properly.

- ☐ Check that the twisted pair cable is securely connected to the port on the switch and to the port on the end node.
- ☐ Make sure that the twisted pair cable does not exceed 100 meters (328 feet).
- ☐ Verify that you are using the appropriate category of twisted pair cable: Category 3 or better for 10 Mbps operation and Category 5 or Category 5E for 100 Mbps operation.
- ☐ Make sure that the operating parameters of the port on the switch are compatible with the end node to which the port is connected. This will require using the switch's management software. For instructions, refer to the **AT-S39 Management Software User's Guide**.

For fiber optic ports, verify that the LINK LED for each port is ON. If a LINK LED is OFF, do the following:

- ☐ Verify that the end node connected to the port is powered ON and is operating properly.
- ☐ Check that the fiber optic cable is securely connected to the port on the switch and to the port on the end node.
- ☐ If the fiber optic port has a dual SC connector, be sure that the receiver fiber port is connected to the transmitter port on the remote end node, and that the transmitter fiber port is connected to the receiver port on the remote node.
- ☐ Make sure that you are using the appropriate type of fiber optic cable and that the cable length does not exceed the allowed maximum distance. For an AT-8016F Series or AT-8026FC switch, refer to **Planning the Installation** on page 53. For an optional GBIC module, refer to the **GBIC Installation Guide**. For an optional fiber optic expansion module, refer to the **Expansion Module Installation Guide**.
- ☐ Use a fiber optic tester to test the attenuation on the cable to determine if the strength of the fiber optic signal falls below acceptable limits. (For fiber optic port specifications for an AT-8026GB switch, refer to **AT-8016F Series and AT-8026FC Fiber Optic Port Specifications** on page 89. For port specifications for a GBIC module, refer to the **GBIC Installation Guide**. For an optional fiber optic expansion module, refer to the **Expansion Module Installation Guide**.)

- ❑ Check that the operating specifications (for instance, wavelength and maximum operating distance) of the fiber optic port on the remote end node are compatible with the fiber optic port on the switch. For example, you cannot connect a fiber optic port with a maximum distance of 40 kilometers and an operating wavelength of 1550 nanometers (nm) to a remote fiber optic port with an maximum distance of only 2 kilometers and a wavelength of 1310 nm.
- ❑ Check to be sure that the fiber optic ports on the switch and on the end node are operating at the same speed and duplex mode.
- ❑ AT-8024GB switch only — Verify that the GBIC module is completely inserted into the GBIC expansion slot on the front of the switch.

Note

A 1000Base connection can take from five to ten seconds for the link to be established.

If the FAULT LED is blinking, no action is required. A blinking FAULT LED could indicate that a new version of the management software is being downloaded to the switch or that the switch's configuration is being changed, such as with the creation of a new VLAN. The LED will stop blinking once the switch has completed the download or its reconfiguration.

If the FAULT LED is constantly ON, a problem has occurred in the switch. Do the following:

- ❑ Reset the switch using the Reset button on the back panel of the switch.
- ❑ If the FAULT LED remains ON after you have reset the switch, power OFF the switch by disconnecting the power cord, wait a few moments, and then reconnect the power cord.
- ❑ If the FAULT LED remains ON, try downloading a new version of the switch's management software through the RS-232 Terminal Port on the front panel of the switch. For instructions, refer to the switch's software management guide.

Note

If the FAULT LED remains steady ON, contact Allied Telesyn Technical Support for assistance.

If you are unable to establish a local management session with the switch through the RS-232 Terminal Port on the front panel, do the following:

- ☐ Check to be sure that the RS-232 cable is securely connected to the RS-232 Terminal Port on the switch and to the RS-232 port on the terminal or personal computer.
- ☐ Check to be sure that you are using a straight-through RS-232 cable. Do not use a cross-over cable.
- ☐ Check to be sure that the operating parameters on the terminal or the terminal emulation program, if you are using a personal computer, have been set correctly. The default settings for the RS232 Terminal Port can be found in **Starting a Local Management Session** on page 71.

Appendix A

Technical Specifications

Physical Specifications

Dimensions 4.4 cm x 43.8 cm x 18.4 cm (H x W x D)
(1.75 in. x 17.25 in. x 7.25 in.)

Weight AT-8016F/MT and AT-8016F/SC - 3.5 kg (7.6 lbs)
AT-8024, AT-8024GB and AT-8026FC - 2.7 kg (5.9 lbs)
AT-8024M - 3.3 kg (7.2 lbs)

**Recommended
Minimum
Ventilation on
All Sides** 10 cm (4.0 in.)

Environmental Specifications

Operating Temperature 0° C to 40° C (32° F to 104° F)

Storage Temperature -25° C to 70° C (-13° F to 158° F)

Operating Humidity 5% to 95% non-condensing

Storage Humidity 5% to 95% non-condensing

Operating Altitude Range Up to 3,000 m (9,843 ft)

Power Specifications

Maximum Power Consumption	63 watts
AC Input Voltage	100-240 VAC 2A
Frequency	50/60 Hz

Safety and Electromagnetic Emissions Certifications

Safety	UL 1950 (UL/cUL), EN60950 (TUV)
EMI	FCC Class A, EN55022 Class A, VCCI Class A, C-TICK, EN61000-3-2, EN61000-3-3
Immunity	EN55024
Quality and Reliability	MTBF > 90,000 hrs, MTTR < 1/2 hr DOA < 1%

Standards

- ☐ IEEE 802.3 (10Base-T Ethernet)
- ☐ IEEE 802.3u (10Base-TX Ethernet)
- ☐ IEEE 802.1d (Spanning Tree)
- ☐ IEEE 802.Q (Virtual LAN tagging)
- ☐ IEEE 802.3x (Flow Control)
- ☐ IEEE 802.3ad (Link Aggregation)
- ☐ RFC 1112 (IGMP Snooping Version 1.0)
- ☐ RFC 2236 (IGMP Snooping Version 2.0)

SNMP Support

- ☐ RFC 1213 (MIB II)
- ☐ RFC 1215 (TRAP MIB)
- ☐ RFC 1493 (Bridge MIB)
- ☐ RFC 1643 (Ethernet MIB)
- ☐ RFC 1573 (Interface Group MIB)
- ☐ RFC 2674 (IEEE 802.1Q MIB)
- ☐ Allied Telesyn International (ATI) Enterprise MIB

Connectors

This section lists the connectors and connector pinouts for the AT-8000 Series Fast Ethernet Switches and its components.

RJ-45 Twisted Pair Port Pinouts

Figure 40 illustrates the pin layout to an RJ-45 connector and port.

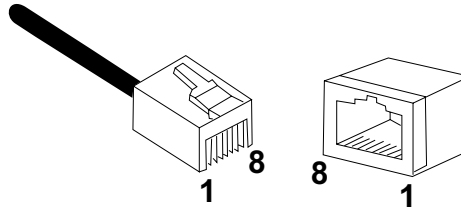


Figure 40 RJ-45 Connector and Port Pin Layout

Table 8 lists the RJ-45 pin signals when a twisted pair port is operating in the MDI configuration.

Table 8 MDI Pin Signals (10Base-T or 100Base-TX)

Pin	Signal
1	TX+
2	TX-
3	RX+
6	RX-

Table 9 lists the RJ-45 port pin signals when a twisted pair port is operating in the MDI-X configuration.

Table 9 MDI-X Pin Signals (10Base-T or 100Base-TX)

Pin	Signal
1	RX+
2	RX-
3	TX+
6	TX-

**RS232 Terminal
Port Pinouts**

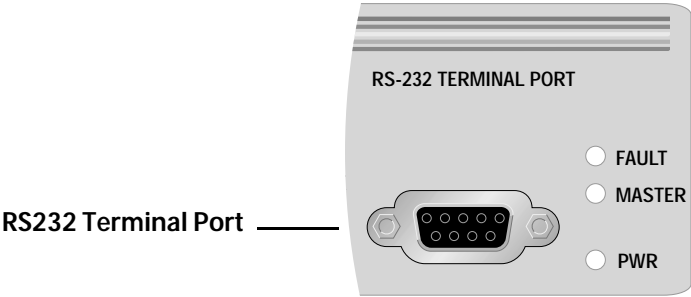


Table 10 lists the pin signals on the RS232 Terminal Port.

Table 10 RS232 Terminal Port Pin Signals

Pin	Signal
1	Data Carrier Detect
2	Transmit Data
3	Receive Data
4	Data Set Ready
5	Ground
6	Data Terminal Ready
7	Clear to Send
8	Request to Send
9	Ring Indicator

RPS 16-pin Molex Connector Port Pinouts

Figure 41 illustrates the pin layout to a 16-pin molex connector and port

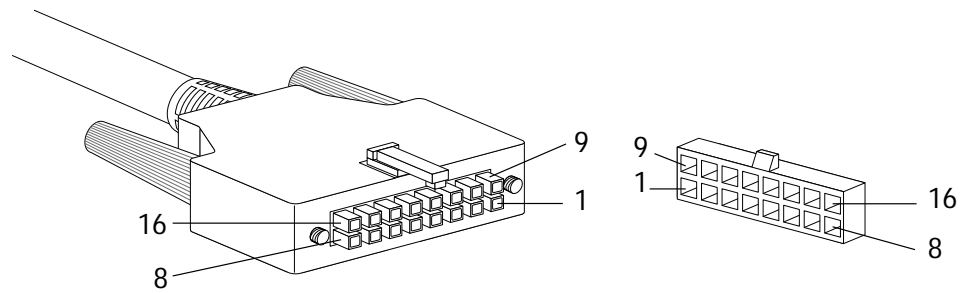


Figure 41 RPS 16-pin Molex Connector Pin Layout

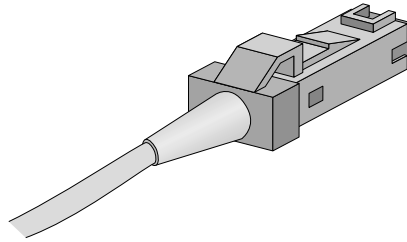
Table 11 lists the 16-pin RPS connector pins and definitions.

Table 11 Pin Definition of the 16-pin RPS Connector

Pin	Definition
1	+12V dc
2	Remote Sense (RS) $\pm 5V$ dc
3	RS Ground
4	RS +3.3V dc
5	Redundant Power Supply (RPS) present
6	Ground (+3.3V dc Return)
7	Ground (+5V dc Return)
8	+5V dc
9	Ground (+12V dc Return)
10	+3.3V dc
11	Ground (+3.3 dc Return)
12	+3.3V dc
13	Ground (+3.3V dc Return)
14	+3.3V dc
15	+5V dc
16	Ground (+5V dc Return)

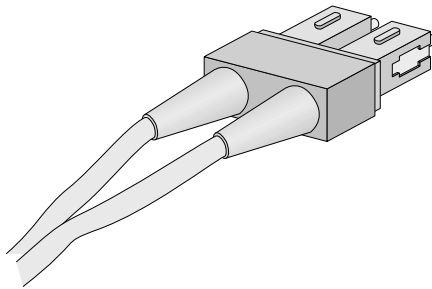
**MT-RJ
Connector**

This connector is used to connect the AT-8016F/MT Fast Ethernet switch and AT-45/MT expansion module with external connection for MT-RJ connector types.



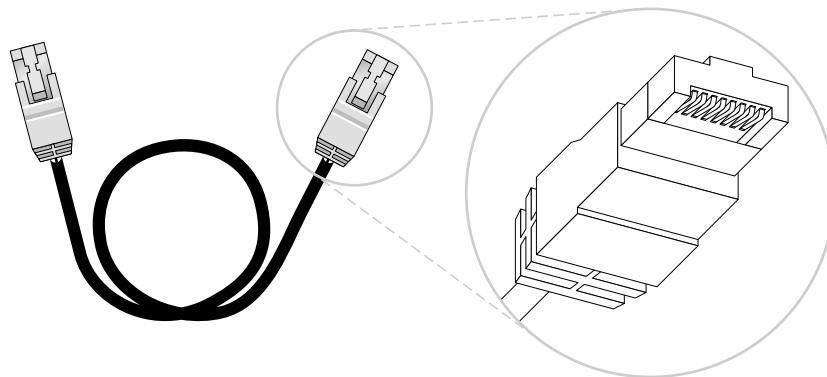
**SC Type
Connector**

This connector is used on the AT-8016F/SC and AT-8026FC Fast Ethernet switches. It is also used to connect with optional GBIC modules and the AT-45/SC expansion module.



**HSSDC
Connector**

The Hyper Speed Serial Data Cable (HSSDC) connector is used for connection on stacking kits.



AT-8016F Series and AT-8026FC Fiber Optic Port Specifications

Table 12 lists the fiber optic port specifications for the AT-8016F Series and AT-8026FC switches.

Table 12 AT-8016F Series and AT-8026FC Fiber Optic Port Specifications

Pin	Signal
Standard	100Base-FX
Speed	100 Mbps
Maximum Operating Distance	2 kilometers
Connector	AT-8016F/SC and AT-8026FC Dual SC AT-8016F/MT MT-RJ
Type of Cabling	50/125 μm or 62.5/125 μm (core/ cladding) multimode fiber optic cabling
Operating Wavelength	1310 nm
Transmitter Output Power	50/125 μm cabling Min: -22.5 dBm avg. Max: -14 dBm avg. 62.5/125 μm cabling Min: -19 dBm avg. Max: -14 dBm avg.
Receiver Sensitivity	Max: -14 dBm avg.

Appendix B

Default Switch Settings

This appendix lists the factory default settings for the switch.

Settings	Default
IP Address	0.0.0.0
Subnet Mask	255.255.0.0
Gateway Address	0.0.0.0
System Name	None
MAC Aging Time	300 seconds
Community Strings	
Get Community String	public
Set Community String	private
Trap Community String	public
Spanning Tree Protocol	
Status	Disabled
Bridge Priority	32768
Bridge Max Age Time	20
Bridge Hello Time	2
Bridge Forwarding Delay	15
IGMP Snooping	
Status	Disabled
Topology	Single Host/ Port (Edge)
Host/Router Time-out Interval	260 seconds
Maximum Multicast Groups	256

Settings	Default
Management Interface	
Manager Login Name	Manager
Manager Password	admin (case-sensitive)
Operator Login Name	Operator
Operator Password	friend (case-sensitive)
Time Out Value	10 minutes
Twisted Pair Ports	
Status	Enabled
Duplex Mode	Auto-negotiation
Speed	Auto-negotiation
Flow Control	Disabled
Broadcast Packets	Forwarded
Security	Automatic
VLANs	
Port-based and Tagged VLAN Status	Enabled
Default VLAN Name	Default_VLAN
Default_VLAN VID	1
Ports in Default_VLAN	All
Basic Mode	Disabled
Broadcast Frame Control	
10 Mbps Interval Timer	0 milliseconds
100 Mbps Interval Timer	0 milliseconds
1000 Mbps Interval Timer	0 microseconds
RS232 Port	
Data Bits	8
Stop Bits	1
Parity	None
Flow Control	Full-duplex
Data Rate	Auto-detect (default 9600 bps)

Appendix C

Translated Electrical Safety and Emission Information

Important: This appendix contains multiple-language translations for the safety statements in this guide.

Wichtig: Dieser Anhang enthält Übersetzungen der in diesem Handbuch enthaltenen Sicherheitshinweise in mehreren Sprachen.

Vigtigt: Dette tillæg indeholder oversættelser i flere sprog af sikkerhedsadvarslerne i denne håndbog.

Belangrijk: Deze appendix bevat vertalingen in meerdere talen van de veiligheidsopmerkingen in deze gids.

Important: Cette annexe contient la traduction en plusieurs langues des instructions de sécurité figurant dans ce guide.

Tärkeää: Tämä liite sisältää tässä oppaassa esiintyvät turvaohjeet usealla kielellä.

Importante: questa appendice contiene traduzioni in più lingue degli avvisi di sicurezza di questa guida.

Viktig: Dette tillegget inneholder oversettelser til flere språk av sikkerhetsinformasjonen i denne veiledningen.

Importante: Este anexo contém traduções em vários idiomas das advertências de segurança neste guia.

Importante: Este apéndice contiene traducciones en múltiples idiomas de los mensajes de seguridad incluidos en esta guía.

Obs! Denna bilaga innehåller flerspråkiga översättningar av säkerhetsmeddelandena i denna handledning.

Standards: This product meets the following safety standards.

U.S. Federal Communications Commission

RADIATED ENERGY



Note: This equipment has been tested and found to comply with the limits for a Class A digital device pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with this instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Note: Modifications or changes not expressly approved by the manufacturer or the FCC can void your right to operate this equipment.







Canadian Department of Communications





This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.



- | | | |
|---|--|--|
| 1 | RFI Emission | FCC Class A, EN55022 Class A, VCCI Class A, C-TICK, EN61000-3-2, EN61000-3-3 |
| 2 |  WARNING: In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures. | |
| 3 | Immunity | EN55024 |
| 4 | Electrical Safety | UL 1950 (UL/cUL), EN60950 (TUV) |
| 5 |  Laser | EN60825 |

SAFETY











- | | |
|----|--|
| 6 |  WARNING: Class 1 Laser product. |
| 7 |  WARNING: Do not stare into the laser beam. |
| 8 |  ELECTRICAL NOTICES
WARNING: ELECTRIC SHOCK HAZARD
To prevent ELECTRIC shock, do not remove the cover. No user-serviceable parts inside. This unit contains HAZARDOUS VOLTAGES and should only be opened by a trained and qualified technician. To avoid the possibility of ELECTRIC SHOCK, disconnect electric power to the product before connecting or disconnecting the LAN cables. |
| 9 |  LIGHTNING DANGER
DANGER: DO NOT WORK on equipment or CABLES during periods of LIGHTNING ACTIVITY. |
| 10 |  CAUTION: POWER CORD IS USED AS A DISCONNECTION DEVICE. TO DE-ENERGIZE EQUIPMENT, disconnect the power cord. |
| 11 |  ELECTRICAL - TYPE CLASS 1 EQUIPMENT
THIS EQUIPMENT MUST BE EARTHED. Power plug must be connected to a properly wired earth ground socket outlet. An improperly wired socket outlet could place hazardous voltages on accessible metal parts. |

- 12  **PLUGGABLE EQUIPMENT**, the socket outlet shall be installed near the equipment and shall be easily accessible.
- 13  **CAUTION:** Air vents must not be blocked and must have free access to the room ambient air for cooling.
- 14  **OPERATING TEMPERATURE:** This product is designed for a maximum ambient temperature of 40° degrees C.
- 15  **ALL COUNTRIES:** Install product in accordance with local and National Electrical Codes.



Normen: Dieses Produkt erfüllt die Anforderungen der nachfolgenden Normen.

- 1 Hochfrequenzstörung FCC Klasse A, EN55022 Klasse A, VCCI Class A, C-TICK, EN61000-3-2, EN61000-3-3
- 2  **WARNUNG:** Bei Verwendung zu Hause kann dieses Produkt Funkstörungen hervorrufen. In diesem Fall müßte der Anwender angemessene Gegenmaßnahmen ergreifen.
- 3 Störsicherheit EN55024
- 4 Elektrische Sicherheit UL 1950 (UL/cUL), EN60950 (TUV)
- 5  Laser EN60825











SICHERHEIT

- 6  **WARNUNG** Laserprodukt der Klasse 1.
- 7  **WARNUNG** Nicht direkt in den Strahl blicken.
- 8  **ACHTUNG: GEFÄHRLICHE SPANNUNG**
Das Gehäuse nicht öffnen. Das Gerät enthält keine vom Benutzer wartbaren Teile. Das Gerät steht unter Hochspannung und darf nur von qualifiziertem technischem Personal geöffnet werden. Vor Anschluß der LAN-Kabel, Gerät vom Netz trennen.
- 9  **GEFAHR DURCH BLITZSCHLAG**
GEFAHR: Keine Arbeiten am Gerät oder an den Kabeln während eines Gewitters ausführen.
- 10  **VORSICHT: DAS NETZKABEL DIENT ZUM TRENNEN DER STROMVERSORGUNG. ZUR TRENNUNG VOM NETZ, KABEL AUS DER STECKDOSE ZIEHEN.**
- 11  **GERÄTE DER KLASSE 1**
DIESE GERÄTE MÜSSEN GEERDET SEIN. Der Netzstecker darf nur mit einer vorschriftsmäßig geerdeten Steckdose verbunden werden. Ein unvorschriftsmäßiger Anschluß kann die Metallteile des Gehäuses unter gefährliche elektrische Spannungen setzen.
- 12  **STECKBARES GERÄT:** Die Anschlußbuchse sollte in der Nähe der Einrichtung angebracht werden und leicht zugänglich sein."
- 13  **VORSICHT**
Die Entlüftungsöffnungen dürfen nicht versperrt sein und müssen zum Kühlen freien Zugang zur Raumluft haben.
- 14  **BETRIEBSTEMPERATUR:** Dieses Produkt wurde für den Betrieb in einer Umgebungstemperatur von nicht mehr als 40° C entworfen.
- 15  **ALLE LÄNDER:** Installation muß örtlichen und nationalen elektrischen Vorschriften entsprechen.



Standarder: Dette produkt tilfredsstiller de følgende standarder.

- | | | |
|---|--|--|
| 1 | Radiofrekvens forstyrrelsesemission | FCC Klasse A, EN55022 Klasse A, VCCI Class A, C-TICK, EN61000-3-2, EN61000-3-3 |
| 2 |  ADVARSEL: I et hjemligt miljø kunne dette produkt forårsage radio forstyrrelse. Bliver det tilfældet, påkræves brugeren muligvis at tage tilstrækkelige foranstaltninger. | |
| 3 | Immunitet | EN55024 |
| 4 | Elektrisk sikkerhed | UL 1950 (UL/cUL), EN60950 (TUV) |
| 5 |  Laser | EN60825 |











SIKKERHED

- | | | |
|----|--|--|
| 6 |  ADVARSEL Laserprodukt av klasse 1. | |
| 7 |  ADVARSEL Stirr ikke på strålen. | |
| 8 |  ELEKTRISKE FORHOLDSREGLER
ADVARSEL: RISIKO FOR ELEKTRISK STØD
For at forebygge ELEKTRISK stød, undlad at åbne apparatet. Der er ingen indre dele, der kan repareres af brugeren. Denne enhed indeholder LIVSFARLIGE STRØMSPÆNDINGER og bør kun åbnes af en uddannet og kvalificeret tekniker. For at undgå risiko for ELEKTRISK STØD, afbrydes den elektriske strøm til produktet, før LAN-kablerne monteres eller afmonteres. | |
| 9 |  FARE UNDER UVEJR
FARE: UNDLAD at arbejde på udstyr eller KABLER i perioder med LYNAKTIVITET. | |
| 10 |  ADVARSEL: DEN STRØMFØRENDE LEDNING BRUGES TIL AT AFBRYDE STRØMMEN. SKAL STRØMMEN TIL APPARATET AFBRYDES, tages ledningen ud af stikket. | |
| 11 |  ELEKTRISK - KLASSE 1-UDSTYR
DETTE UDSYR KRÆVER JORDFORBINDELSE. Stikket skal være forbundet med en korrekt installeret jordforbunden stikkontakt. En ukorrekt installeret stikkontakt kan sætte livsfarlig spænding til tilgængelige metaldele. | |
| 12 |  UDSTYR TIL STIKKONTAKT , stikkontakten bør installeres nær ved udstyret og skal være lettilgængelig. | |
| 13 |  ADVARSEL: Ventilationsåbninger må ikke blokeres og skal have fri adgang til den omgivende luft i rummet for afkøling. | |
| 14 |  BETJENINGSTEMPERATUR: Dette apparat er konstrueret til en omgivende temperatur på maksimum 40 grader C. | |
| 15 |  ALLE LANDE: Installation af produktet skal ske i overensstemmelse med lokal og national lovgivning for elektriske installationer. | |



Eisen: Dit product voldoet aan de volgende eisen.

- | | | |
|-----|---|--|
| 🔌 1 | RFI Emissie | FCC Klasse A, EN55022 Klasse A, VCCI Class A, C-TICK, EN61000-3-2, EN61000-3-3 |
| 🔌 2 |  WAARSCHUWING: Binnenshuis kan dit product radiostoring veroorzaken, in welk geval de gebruiker verplicht kan worden om gepaste maatregelen te nemen. | |
| 🔌 3 | Immunititeit | EN55024 |
| 🔌 4 | Electrische Veiligheid | UL 1950 (UL/cUL), EN60950 (TUV) |
| 🔌 5 |  Laser | EN60825 |











VEILIGHEID

- | | |
|------|---|
| 🔌 6 |  WAARSHUWING Klasse-1 laser produkt. |
| 🔌 7 |  WAARCHUWING Neit in de straal staren. |
| 🔌 8 |  WAARSCHUWINGEN MET BETREKKING TOT ELEKTRICITEIT
WAARSCHUWING: GEVAAR VOOR ELEKTRISCHE SCHOKKEN
Verwijder het deksel niet, teneinde ELEKTRISCHE schokken te voorkomen. Binnenin bevinden zich geen onderdelen die door de gebruiker onderhouden kunnen worden. Dit toestel staat onder GEVAARLIJKE SPANNING en mag alleen worden geopend door een daartoe opgeleide en bevoegde technicus. Om het gevaar op ELEKTRISCHE SCHOKKEN te vermijden, moet u het toestel van de stroombron ontkoppelen alvorens de LAN-kabels te koppelen of ontkoppelen. |
| 🔌 9 |  GEVAAR VOOR BLIKSEMINSLAG
GEVAAR: NIET aan toestellen of KABELS WERKEN bij BLIKSEM. |
| 🔌 10 |  WAARSCHUWING: HET TOESTEL WORDT UITGESCHAKELD DOOR DE STROOMKABEL TE ONTKOPPELEN. OM HET TOESTEL STROOMLOOS TE MAKEN: de stroomkabel ontkoppelen. |
| 🔌 11 |  ELEKTRISCHE TOESTELLEN VAN KLASSE 1
DIT TOESTEL MOET GEAARD WORDEN. De stekker moet aangesloten zijn op een juist geaarde contactdoos. Een onjuist geaarde contactdoos kan de metalen onderdelen waarmee de gebruiker eventueel in aanraking komt onder gevaarlijke spanning stellen. |
| 🔌 12 |  AAN TE SLUITEN APPARATUUR, de contactdoos wordt in de nabijheid van de apparatuur geïnstalleerd en is gemakkelijk te bereiken." |
| 🔌 13 |  OPGELET: De ventilatiegaten mogen niet worden gesperd en moeten de omgevingslucht ongehinderd toelaten voor afkoeling. |
| 🔌 14 |  BEDRIJFSTEMPERATUUR: De omgevingstemperatuur voor dit produkt mag niet meer bedragen dan 40 graden Celsius. |
| 🔌 15 |  ALLE LANDEN: het toestel installeren overeenkomstig de lokale en nationale elektrische voorschriften. |



Normes: ce produit est conforme aux normes de suivantes:

- | | | |
|---|---|--|
| 1 | Emission d'interférences radioélectriques | FCC Classe A, EN55022 Classe A, VCCI Class A, C-TICK, EN61000-3-2, EN61000-3-3 |
| 2 |  MISE EN GARDE : dans un environnement domestique, ce produit peut provoquer des interférences radioélectriques. Auquel cas, l'utilisateur devra prendre les mesures adéquates. | |
| 3 | Immunité | EN55024 |
| 4 | Sécurité électrique | UL 1950 (UL/cUL), EN60950 (TUV) |
| 5 |  Laser | EN60825 |











SÉCURITÉ

- | | | |
|----|---|--|
| 6 |  ATTENTION Produit laser di classe 1. | |
| 7 |  ATTENTION Ne pas fixer le faisceau des yeux. | |
| 8 |  INFORMATION SUR LES RISQUES ÉLECTRIQUES
AVERTISSEMENT: DANGER D'ÉLECTROCUTION
Pour éviter toute ÉLECTROCUTION, ne pas ôter le revêtement protecteur du matériel. Ce matériel ne contient aucun élément réparable par l'utilisateur. Il comprend des TENSIONS DANGEREUSES et ne doit être ouvert que par un technicien dûment qualifié. Pour éviter tout risque d'ÉLECTROCUTION, débrancher le matériel avant de connecter ou de déconnecter les câbles LAN. | |
| 9 |  DANGER DE FOUDRE
DANGER: NE PAS MANIER le matériel ou les CÂBLES lors d'activité orageuse. | |
| 10 |  ATTENTION: LE CORDON D'ALIMENTATION SERT DE MISE HORS CIRCUIT. POUR COUPER L'ALIMENTATION DU MATÉRIEL, débrancher le cordon. | |
| 11 |  ÉQUIPEMENT DE CLASSE 1 ÉLECTRIQUE
CE MATÉRIEL DOIT ÊTRE MIS A LA TERRE. La prise de courant doit être branchée dans une prise femelle correctement mise à la terre car des tensions dangereuses risqueraient d'atteindre les pièces métalliques accessibles à l'utilisateur. | |
| 12 |  EQUIPEMENT POUR BRANCHEMENT ELECTRIQUE, la prise de sortie doit être placée près de l'équipement et facilement accessible". | |
| 13 |  ATTENTION: Ne pas bloquer les fentes d'aération, ceci empêcherait l'air ambiant de circuler librement pour le refroidissement. | |
| 14 |  TEMPÉRATURE DE FONCTIONNEMENT: Ce matériel est capable de tolérer une température ambiante maximum de ou 40 degrés Celsius. | |
| 15 |  POUR TOUS PAYS: Installer le matériel conformément aux normes électriques nationales et locales. | |



Standardit: Tämä tuote on seuraavien standardien mukainen.

- | | | |
|-----|--|--|
| 🔌 1 | Radioaaltojen häirintä | FCC Luokka A, EN55022 Luokka A, VCCI Class A, C-TICK, EN61000-3-2, EN61000-3-3 |
| 🔌 2 |  VAROITUS: Kotiolosuhteissa tämä laite voi aiheuttaa radioaaltojen häiriitä, missä tapauksessa laitteen käyttäjän on mahdollisesti ryhdyttävä tarpeellisiin toimenpiteisiin. | |
| 🔌 3 | Kestävyys | EN55024 |
| 🔌 4 | Sähköturvallisuus | UL 1950 (UL/cUL), EN60950 (TUV) |
| 🔌 5 |  Laser | EN60825 |











TURVALLISUUS

- | | | |
|------|---|--|
| 🔌 6 |  VAROITUS Luokan 1 Lasertuote. | |
| 🔌 7 |  VAROITUS Älä katso säteeseen. | |
| 🔌 8 |  SÄHKÖÖN LIITTYVIÄ HUOMAUTUKSIA
VAROITUS: SÄHKÖISKUVAARA
Estääksesi SÄHKÖISKUN älä poista kantta. Sisällä ei ole käyttäjän huollettavissa olevia osia. Tämä laite sisältää VAARALLISIA JÄNNITTEITÄ ja sen voi avata vain koulutettu ja pätevä teknikko. Välttääksesi SÄHKÖISKUN mahdollisuuden katkaise sähkövirta tuotteeseen ennen kuin liität tai irrotat paikallisverkon (LAN) kaapelit. | |
| 🔌 9 |  SALAMANISKUVAARA
HENGENVAARA: ÄLÄ TYÖSKENTELE laitteiden tai KAAPELEIDEN KANSSA SALAMOINNIN AIKANA. | |
| 🔌 10 |  HUOMAUTUS: VIRTAJOHTOA KÄYTETÄÄN VIRRANKATKAISULAITTEENA. VIRTA KATKAISTAAN irrottamalla virtajohto. | |
| 🔌 11 |  SÄHKÖ - TYYPPILUOKAN 1 LAITTEET
TÄMÄ LAITE TÄYTYY MAADOITTAA. Pistoke täytyy liittää kunnollisesti maadoitettuun pistorasiaan. Virheellisesti johdotettu pistorasia voi altistaa metalliosat vaarallisille jännitteille. | |
| 🔌 12 |  PISTORASIAAN KYTKETTÄVÄ LAITE; pistorasia on asennettava laitteen lähelle ja siihen on oltava esteetön pääsy." | |
| 🔌 13 |  HUOMAUTUS: Ilmavaihtoreikiä ei pidä tukkia ja niillä täytyy olla vapaa yhteys ympäröivään huoneilmaan, jotta ilmanvaihto tapahtuisi. | |
| 🔌 14 |  KÄYTTÖLÄMPÖTILA: Tämä tuote on suunniteltu ympäröivän ilman maksimilämpötilalle 40°C. | |
| 🔌 15 |  KAIKKI MAAT: Asenna tuote paikallisten ja kansallisten sähköturvallisuusmääräysten mukaisesti. | |



Standard: Questo prodotto è conforme ai seguenti standard.

- | | | |
|---|--|--|
| 1 | Emissione RFI (interferenza di radiofrequenza) | FCC Classe A, EN55022 Classe A, VCCI Class A, C-TICK, EN61000-3-2, EN61000-3-3 |
| 2 |  AVVERTENZA: in ambiente domestico questo prodotto potrebbe causare radio interferenza. In questo caso potrebbe richiedersi all'utente di prendere gli adeguati provvedimenti. | |
| 3 | Immunità | EN55024 |
| 4 | Sicurezza elettrica | UL 1950 (UL/cUL), EN60950 (TUV) |
| 5 |  Laser | EN60825 |











NORME DI SICUREZZA

- | | |
|----|---|
| 6 |  AVVERTENZA Prodotto laser di Classe 1. |
| 7 |  AVVERTENZA Non fissare il raggio con gli occhi. |
| 8 |  AVVERTENZE ELETTRICHE
ATTENZIONE: PERICOLO DI SCOSSE ELETTRICHE
Per evitare SCOSSE ELETTRICHE non asportare il coperchio. Le componenti interne non sono riparabili dall'utente. Questa unità ha TENSIONI PERICOLOSE e va aperta solamente da un tecnico specializzato e qualificato. Per evitare ogni possibilità di SCOSSE ELETTRICHE, interrompere l'alimentazione del dispositivo prima di collegare o staccare i cavi LAN. |
| 9 |  PERICOLO DI FULMINI
PERICOLO: NON LAVORARE sul dispositivo o sui CAVI durante PRECIPITAZIONI TEMPORALESCHIE. |
| 10 |  ATTENZIONE: IL CAVO DI ALIMENTAZIONE È USATO COME DISPOSITIVO DI DISATTIVAZIONE. PER TOGLIERE LA CORRENTE AL DISPOSITIVO staccare il cavo di alimentazione. |
| 11 |  ELETTRICITÀ - DISPOSITIVI DI CLASSE 1
QUESTO DISPOSITIVO DEVE AVERE LA MESSA A TERRA. La spina deve essere inserita in una presa di corrente specificamente dotata di messa a terra. Una presa non cablata in maniera corretta rischia di scaricare una tensione pericolosa su parti metalliche accessibili. |
| 12 |  APPARECCHIATURA COLLEGABILE , la presa va installata vicino all'apparecchio per risultare facilmente accessibile". |
| 13 |  ATTENZIONE: le prese d'aria non vanno ostruite e devono consentire il libero ricircolo dell'aria ambiente per il raffreddamento. |
| 14 |  TEMPERATURA DI FUNZIONAMENTO: Questo prodotto è concepito per una temperatura ambientale massima di 40 gradi centigradi. |
| 15 |  TUTTI I PAESI: installare il prodotto in conformità delle vigenti normative elettriche nazionali. |



Sikkerhetsnormer: Dette produktet tilfredsstiller følgende sikkerhetsnormer.

- | | | |
|-----|---|--|
| 🔌 1 | RFI stråling | FCC Klasse A, EN55022 Klasse A, VCCI Class A, C-TICK, EN61000-3-2, EN61000-3-3 |
| 🔌 2 |  ADVARSEL: Hvis dette produktet benyttes til privat bruk, kan produktet forårsake radioforstyrrelse. Hvis dette skjer, må brukeren ta de nødvendige forholdsregler. | |
| 🔌 3 | Immunitet | EN55024 |
| 🔌 4 | Elektrisk sikkerhet | UL 1950 (UL/cUL), EN60950 (TUV) |
| 🔌 5 |  Laser | EN60825 |











SIKKERHET

- | | | |
|------|--|--|
| 🔌 6 |  ADVARSEL Laserprodukt av klasse 1. | |
| 🔌 7 |  ADVARSEL Stirr ikke på strålen. | |
| 🔌 8 |  ELEKTRISITET
ADVARSEL: FARE FOR ELEKTRISK SJOKK
For å unngå ELEKTRISK sjokk, må dekslet ikke tas av. Det finnes ingen deler som brukeren kan reparere på innsiden. Denne enheten inneholder FARLIGE SPENNINGER, og må kun åpnes av en faglig kvalifisert tekniker. For å unngå ELEKTRISK SJOKK må den elektriske strømmen til produktet være avslått før LAN-kablene til- eller frakobles. | |
| 🔌 9 |  FARE FOR LYNNEDSLAG
FARE: ARBEID IKKE på utstyr eller KABLER i TORDENVÆR. | |
| 🔌 10 |  FORSIKTIG: STRØMLEDNINGEN BRUKES TIL Å FRAKOBLE UTSTYRET. FOR Å DEAKTIVISERE UTSTYRET, må strømforsyningen kobles fra. | |
| 🔌 11 |  ELEKTRISK - TYPE 1- KLASSE UTSTYR
DETTE UTSTYRET MÅ JORDES. Strømkontakten må være tilkopleet en korrekt jordet kontakt. En kontakt som ikke er korrekt jordet kan føre til farlig spenninger i lett tilgjengelige metalleder. | |
| 🔌 12 |  UTSTYR FOR STIKKONTAKT. Stikkontakten skal monteres i nærheten av utstyret og skal være lett tilgjengelig." | |
| 🔌 13 |  FORSIKTIG: Luftventilene må ikke blokkeres, og må ha fri tilgang til luft med romtemperatur for avkjøling. | |
| 🔌 14 |  DRIFTSTEMPERATUR: Dette produktet er konstruert for bruk i maksimum romtemperatur på 40 grader celsius. | |
| 🔌 15 |  ALLE LAND: Produktet må installeres i samsvar med de lokale og nasjonale elektriske koder. | |



Padrões: Este produto atende aos seguintes padrões.

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| 1 | Emissão de interferência de radiofrequência | FCC Classe A, EN55022 Classe A, VCCI Class A, C-TICK, EN61000-3-2, EN61000-3-3 |
| 2 |  AVISO: Num ambiente doméstico este produto pode causar interferência na radiorrecepção e, neste caso, pode ser necessário que o utente tome as medidas adequadas. | |
| 3 | Imunidade | EN55024 |
| 4 | Segurança Eléctrica | UL 1950 (UL/cUL), EN60950 (TUV) |
| 5 |  Laser | EN60825 |











SEGURANÇA

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| 6 |  AVISO Produto laser de classe 1 | |
| 7 |  AVISO Não olhe fixamente para o raio. | |
| 8 |  AVISOS SOBRE CARACTERÍSTICAS ELÉTRICAS
ATENÇÃO: PERIGO DE CHOQUE ELÉTRICO
Para evitar CHOQUE ELÉTRICO, não retire a tampa. Não contém peças que possam ser consertadas pelo usuário. Este aparelho contém VOLTAGENS PERIGOSAS e só deve ser aberto por um técnico qualificado e treinado. Para evitar a possibilidade de CHOQUE ELÉTRICO, desconecte o aparelho da fonte de energia elétrica antes de conectar e desconectar os cabos da LAN. | |
| 9 |  PERIGO DE CHOQUE CAUSADO POR RAIOS
PERIGO: NÃO TRABALHE no equipamento ou nos CABOS durante períodos suscetíveis a QUEDAS DE RAIOS. | |
| 10 |  CUIDADO: O CABO DE ALIMENTAÇÃO É UTILIZADO COMO UM DISPOSITIVO DE DESCONEXÃO. PARA DESELETRIFICAR O EQUIPAMENTO, desconecte o cabo de ALIMENTAÇÃO. | |
| 11 |  ELÉTRICO - EQUIPAMENTOS DO TIPO CLASSE 1
DEVE SER FEITA LIGAÇÃO DE FIO TERRA PARA ESTE EQUIPAMENTO. O plugue de alimentação deve ser conectado a uma tomada com adequada ligação de fio terra. Tomadas sem adequada ligação de fio terra podem transmitir voltagens perigosas a peças metálicas expostas. | |
| 12 |  EQUIPAMENTO DE LIGAÇÃO , a tomada eléctrica deve estar instalada perto do equipamento e ser de fácil acesso." | |
| 13 |  CUIDADO: As aberturas de ventilação não devem ser bloqueadas e devem ter acesso livre ao ar ambiente para arrefecimento adequado do aparelho. | |
| 14 |  TEMPERATURA DE FUNCIONAMENTO: Este produto foi projetado para uma temperatura ambiente máxima de 40 graus centígrados. | |
| 15 |  TODOS OS PAÍSES: Instale o produto de acordo com as normas nacionais e locais para instalações elétricas. | |



Estándares: Este producto cumple con los siguientes estándares.

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| 🔌 1 | Emisión RFI | FCC Clase A, EN55022 Clase A, VCCI Class A, C-TICK, EN61000-3-2, EN61000-3-3 |
| 🔌 2 |  ADVERTENCIA: en un entorno doméstico, este producto puede causar radiointerferencias, en cuyo caso, puede requerirse del usuario que tome las medidas que sean convenientes al respecto. | |
| 🔌 3 | Inmunidad | EN55024 |
| 🔌 4 | Seguridad eléctrica | UL 1950 (UL/cUL), EN60950 (TUV) |
| 🔌 5 |  Laser | EN60825 |











SEGURIDAD

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| 🔌 6 |  ¡ADVERTENCIA! Producto láser Clase 1. |
| 🔌 7 |  ¡ADVERTENCIA! No mirat fijamente el haz. |
| 🔌 8 |  AVISOS ELECTRICOS
ADVERTENCIA: PELIGRO DE ELECTROCHOQUE
Para evitar un ELECTROCHOQUE, no quite la tapa. No hay ningún componente en el interior al cual puede prestar servicio el usuario. Esta unidad contiene VOLTAJES PELIGROSOS y sólo deberá abrirla un técnico entrenado y calificado. Para evitar la posibilidad de ELECTROCHOQUE desconecte la corriente eléctrica que llega al producto antes de conectar o desconectar los cables LAN. |
| 🔌 9 |  PELIGRO DE RAYOS
PELIGRO: NO REALICE NINGUN TIPO DE TRABAJO O CONEXION en los equipos o en LOS CABLES durante TORMENTAS ELECTRICAS. |
| 🔌 10 |  ATENCION: EL CABLE DE ALIMENTACION SE USA COMO UN DISPOSITIVO DE DESCONEXION. PARA DESACTIVAR EL EQUIPO, desconecte el cable de alimentación. |
| 🔌 11 |  ELECTRICO - EQUIPO DEL TIPO CLASE 1
ESTE EQUIPO TIENE QUE TENER CONEXION A TIERRA. El cable tiene que conectarse a un enchufe a tierra debidamente instalado. Un enchufe que no está correctamente instalado podría ocasionar tensiones peligrosas en las partes metálicas que están expuestas. |
| 🔌 12 |  EQUIPO CONECTABLE, el tomacorriente se debe instalar cerca del equipo, en un lugar con acceso fácil". |
| 🔌 13 |  ATENCION: Las aberturas para ventilación no deberán bloquearse y deberán tener acceso libre al aire ambiental de la sala para su enfriamiento. |
| 🔌 14 |  TEMPERATURA REQUERIDA PARA LA OPERACIÓN: Este producto está diseñado para una temperatura ambiental máxima de 40 grados C. |
| 🔌 15 |  PARA TODOS LOS PAÍSES: Monte el producto de acuerdo con los Códigos Eléctricos locales y nacionales. |

Standarder: Denna produkt uppfyller följande standarder.

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| ☞ 1 | Radiostörning | FCC Klass A, EN55022 Klass A, VCCI Class A, C-TICK, EN61000-3-2, EN61000-3-3 |
| ☞ 2 |  WARNING: Denna produkt kan ge upphov till radiostörningar i hemmet, vilket kan tvinga användaren till att vidtaga erforderliga åtgärder. | |
| ☞ 3 | Immunitet | EN55024 |
| ☞ 4 | Elsäkerhet | UL 1950 (UL/cUL), EN60950 (TUV) |
| ☞ 5 |  Laser | EN60825 |

SÄKERHET

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| ☞ 6 |  WARNING! Laserprodukt av klass 1. | |
| ☞ 7 |  WARNING! Laserstrålning när enheten är öppen. | |
| ☞ 8 |  TILLKÄNNAGIVANDEN BETRÄFFANDE ELEKTRICITETSRISK:
RISK FÖR ELEKTRISK STÖT För att undvika ELEKTRISK stöt, ta ej av locket. Det finns inga delar inuti som behöver underhållas. Denna apparat är under HÖGSPÄNNING och får endast öppnas av en utbildad kvalificerad tekniker. För att undvika ELEKTRISK STÖT, koppla ifrån produktens strömanslutning innan LAN-kablarna ansluts eller kopplas ur. | |
| ☞ 9 |  FARA FÖR BLIXTNEDSLAG
FARA: ARBETA EJ på utrustningen eller kablarna vid ÅSKVÄDER. | |
| ☞ 10 |  WARNING: NÄTKABELN ANVÄNDS SOM STRÖMBRYTARE FÖR ATT KOPPLA FRÅN STRÖMMEN, dra ur nätkabeln. | |
| ☞ 11 |  ELEKTRISKT - TYP KLAS 1 UTRUSTNING
DENNA UTRUSTNING MÅSTE VARA JORDAD. Nätkabeln måste vara ansluten till ett ordentligt jordat uttag. Ett felaktigt uttag kan göra att närliggande metalldelar utsätts för högspänning. Apparaten skall anslutas till jordat uttag, när den ansluts till ett nätverk. | |
| ☞ 12 |  UTRUSTNING MED PLUGG. Uttaget skall installeras i utrustningens närhet och vara lättåtkomligt". | |
| ☞ 13 |  WARNING: Luftventilerna får ej blockeras och måste ha fri tillgång till omgivande rumsluft för avsvälvning. | |
| ☞ 14 |  DRIFTSTEMPERATUR: Denna produkt är konstruerad för rumstemperatur ej överstigande 40 grader Celsius. | |
| ☞ 15 |  ALLA LÄNDER: Installera produkten i enlighet med lokala och statliga bestämmelser för elektrisk utrustning. | |